

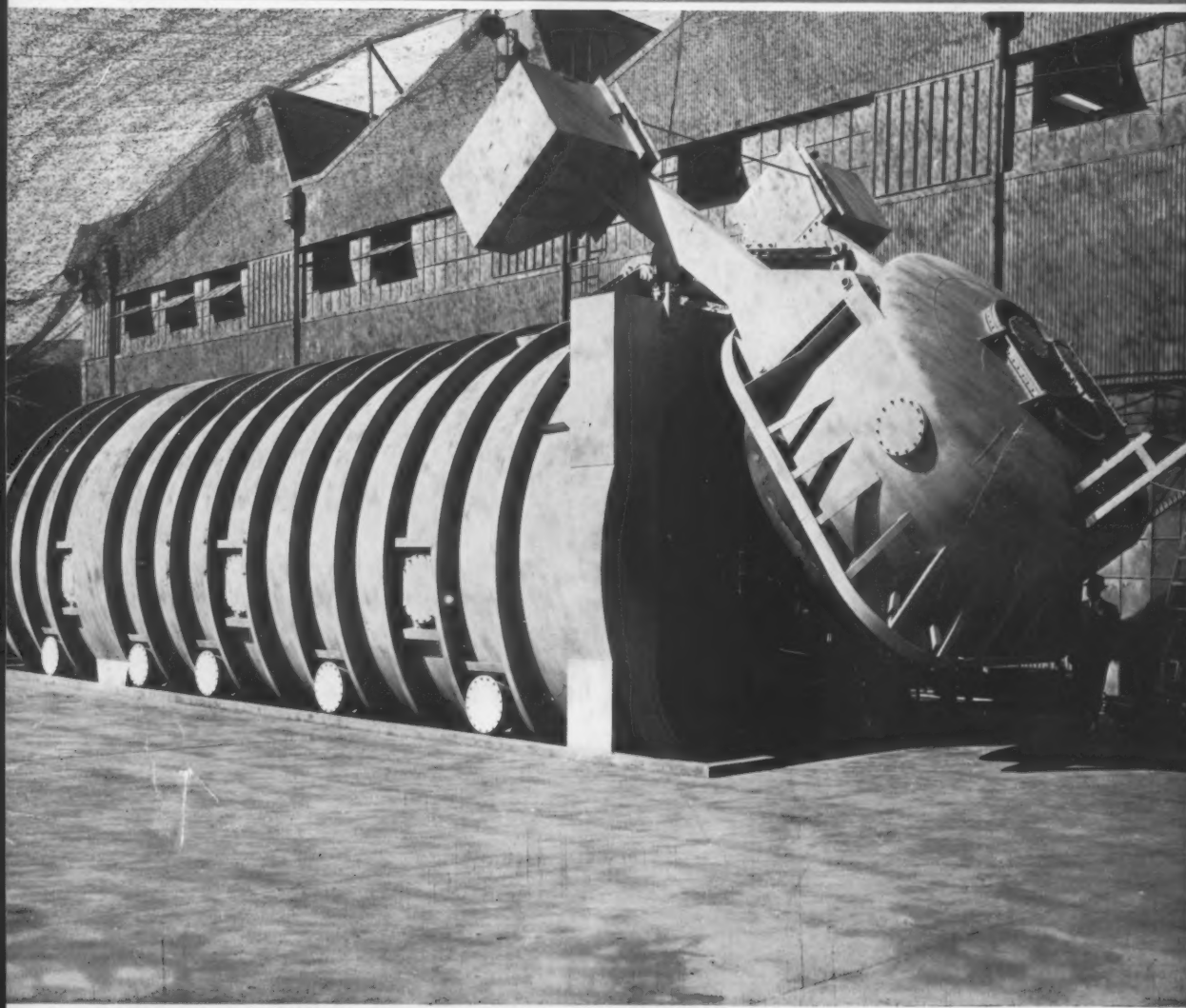
1/7
AUG 6 '45

THE *Refrigeration* Industry

INSTALLATION
MAINTENANCE
MERCHANDISING

AUGUST, 1945

AIR CONDITIONING
MACHINERY

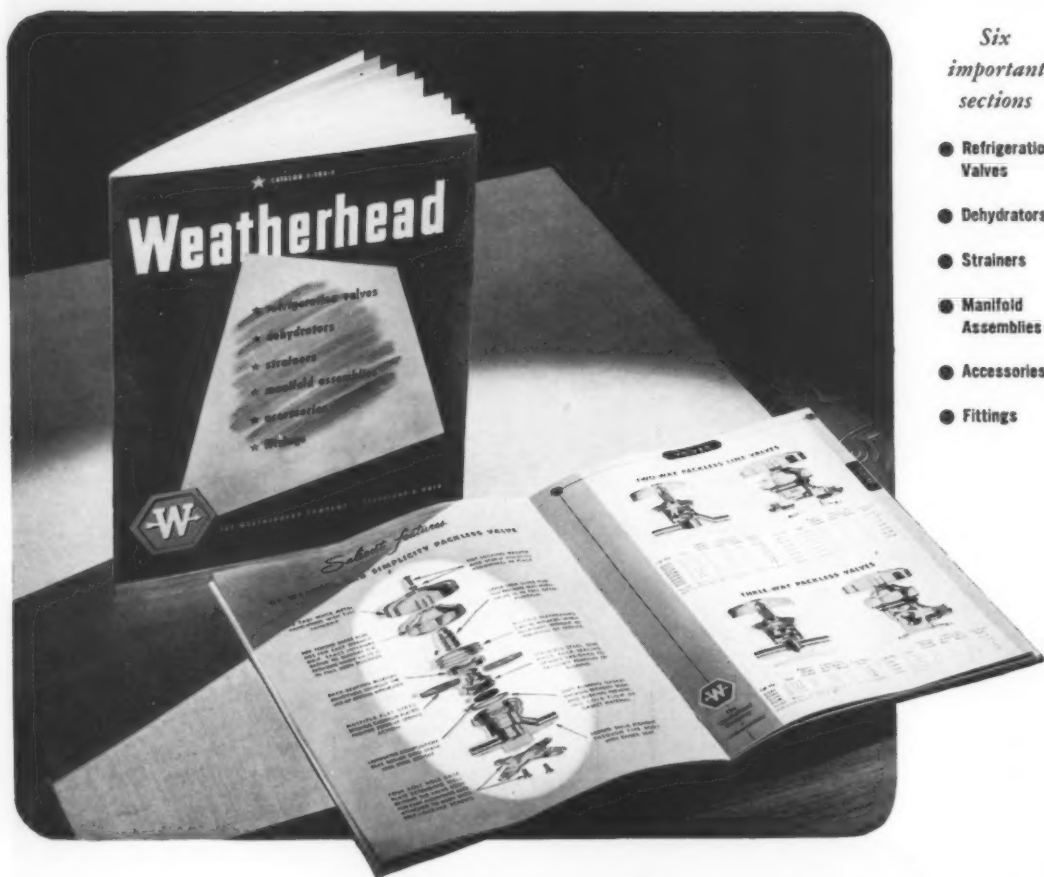


IN THIS ISSUE:

{ The Little Fellow . . . Getting Down into Pay Dirt
Cleaning Air Conditioning Systems . . . Grunow Service
First Line of Defense . . . Stratosphere Test Room

Every refrigeration man needs this new catalog!

Designers, engineers, service-men, purchasing agents—every key department head in the refrigeration field—should have this new Weatherhead Refrigeration Catalog. It gives you at a glance detailed, illustrated data on the multitude of *improved* refrigeration parts Weatherhead engineers have designed and created for original installations and replacement work. Write or call one of our branch offices for a free copy of this 40-page catalog.



Six important sections

- Refrigeration Valves
- Dehydrators
- Strainers
- Manifold Assemblies
- Accessories
- Fittings

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Weatherhead

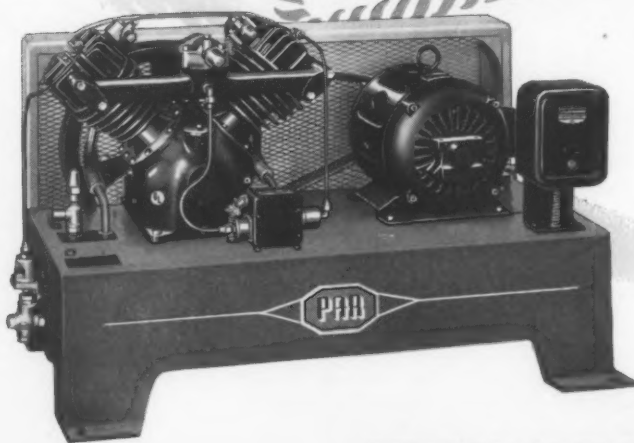
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PAR—Condensing Unit Line sold exclusively through Franchised Refrigeration Supply Jobbers!

PAR
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 DIVISION

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U. S. A.

AUGUST, 1945



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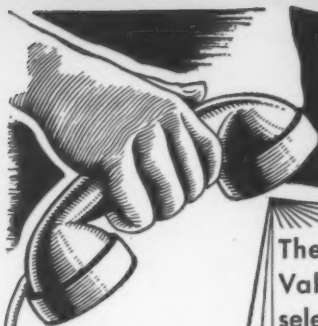
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A superior dehydrant



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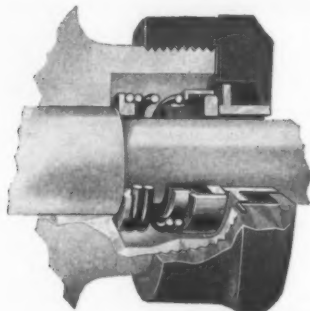
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Rotary Seals for

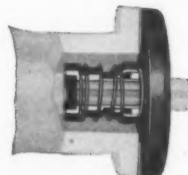
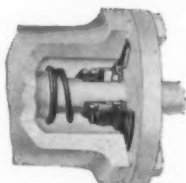
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COMMERCIAL

TOP QUALITY COMPRESSOR REPAIR

Servicemen everywhere select Rotary Seals for their customers' equipment because experience has proven that the Rotary Seal gives performance on used equipment comparable to service given by the original part used in new compressors.



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Besides being a top quality product, another Rotary Seal advantage is its availability at all leading jobbers. When you need a seal there is no shopping around to do. Go to the jobber of your preference and there you will find the seals that are "First Choice"
—Rotary Seal Replacement Units.



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4

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at no extra cost...

Anaconda CUP SEAL

1. **Clean, Bright, Dehydrated Interior** maintained by the cup seal.
2. **Waste Minimized** because end cut off is no longer than diameter of tube.
3. **No Sharp Edges** at the end of tube to dent or mar the coil.
4. **Easily Fed** through smaller openings than is possible with crimped or flattened ends.

TYPICAL of the extra value engineered into *Anaconda* Refrigeration Tubes is this exclusive Cup Seal*. A small item, to be sure! Yet it protects the interior of the tube, reduces waste, minimizes danger of damage to the coil, and facilitates installation.

Anaconda Refrigeration Tubes... made to A.S.T.M. specifications B 68-43... are 99.9% pure copper, specially deoxidized to increase their corrosion resistance. As you'd expect, they are uniformly soft, easy to bend and can be readily flared without cracking.

Ask your jobber about Anaconda Copper Refrigeration Tubes. Available in standard sizes up to and including 3/4" O.D., stocked in 25, 50 and 100 foot coils, or longer lengths on special order.

*Patent Applied For

45090



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American Vibration Eliminators exclude vibration and compensate for thermal expansion in pipe systems. Pressure-tight, safe for conveying costly gases or liquids, such as refrigerants, American Vibration Eliminators are easily installed. For catalog, write American Metal Hose Branch, Waterbury 88, Connecticut.

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Anaconda Refrigeration Tubes

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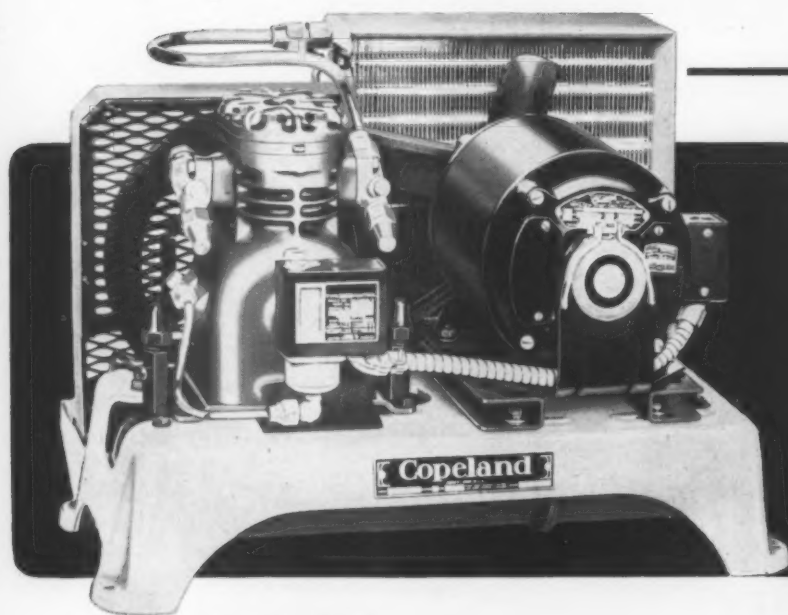
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DEPENDABLE *Electric* REFRIGERATION

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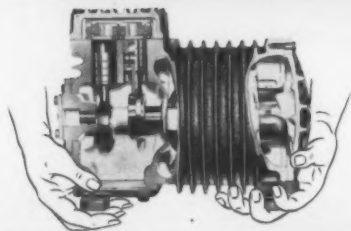
Don't let any refrigeration unit problem bother you, for in the Copeland line you will find just the type and size of unit you need to give your customers the best and most efficient service.



*Ask for
the Complete
Copeland
Catalog*

COPELAMETIC

—combines all the good features of welded-in hermetics and open-type units. No belt! No seal! No manual oiling! Not available now, but ready for production in a wide range of sizes.



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THE *Refrigeration* INDUSTRY

VOLUME 2, No. 8

AUGUST, 1945

The Refrigeration Industry

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THERMOBANK

by
KRAMER



Actual THERMOBANK
installation in Locker Storage
Plant of 500 locker capacity.

Write for
Bulletin

With the THERMOBANK a zero degree system is just as automatic as a 40° system.

It defrosts itself without the use of electric heaters, brine spray or water spray.



KRAMER TRENTON COMPANY

Trenton, New Jersey

REDUCE YOUR OPERATING COSTS WITH THE "LITTLE GIANT" PURGER

The "Little Giant" Purger is an essential item and a profitable investment that quickly pays for itself because:

- It reduces power costs**
- It saves expensive refrigerant**
- It reduces wear and tear on equipment**

When non-condensable gases are present in a refrigerant system, it will operate at higher pressures than it would if these gases were not present. Unnecessarily high pressures result in the compressor being subject to:

- Higher bearing loads**
- Higher discharging temperatures**
- Increased wear on moving parts**
- Greater power consumption**

It is particularly important that the refrigeration system be purged after a shut-down period of any considerable time. The usual practice is to pump the refrigerant back into the receiver and lock it in by means of valves. Repairs or alterations are made on the system during this time, and it is practically impossible to evacuate the system completely, with the result that the remaining air will cause excessive head pressures.

HERE ARE THE ADVANTAGES OF PURGING WITH THE "LITTLE GIANT" PURGER:

THERE IS NO GUESSING—There is positive indication when purging is necessary. The sight glass gives visible evidence of non-condensable gases in the system.

NO REFRIGERANT LOSS—The air in the system is completely separated from the refrigerant before the purge valve is opened.

SIMPLE TO OPERATE—All operating valves easily accessible. Not necessary to check pressures or temperatures. No need to shut down the system.

POWER SAVINGS—Power savings, due to a reduction in head pressure will pay for the "Little Giant" many times over.

MANUAL OPERATION—Fully manually operated, there is no possibility of a slow leak developing which would cause a loss of refrigerant before cause is discovered.



Write us for full particulars and instructions for installation and operation

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PORT HURON, MICHIGAN

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IMMEDIATE DELIVERY AT NEW LOW PRICES

JOBBERs and DEALERs!

Handle the money-making AMCOIL line in your area. Write today for details of our attractive line of cooling units—a few localities are still open to qualified jobbers.

A RARE COMBINATION

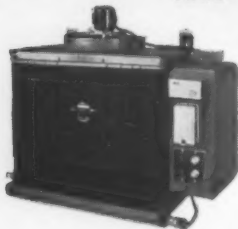
The highest quality at Lowest prices

Improved manufacturing methods and automatic machinery have enabled us to reduce prices on all Amcoil units.

Prices effective as of April 1, 1945 and supersede all previous lists.
They are subject to change without notice.

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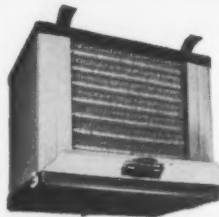
FOOD CONDITIONER COOLING UNIT



Automatically preserves foods without dehydration. Temperatures from 36° to 40° F. For reach-in and walk-in coolers.

MODEL	BTU/HR 15" MTD	LIST PRICE
RIF 38	4,600	\$270.00
RIF 43	5,500	283.00
OCF 56	6,500	290.00
OCF 82	9,200	325.00
OCF 126	13,000	350.00
OCF 166	19,500	390.00
FC 50	7,500	333.00
FC 80	11,300	378.00
FC 130	17,000	601.00
FC 160	22,600	641.00

ALSERVICE OPEN FACE UNIT



For efficient cooling and serves as a general utility unit in preserving foods where a forced draft cooling unit is required. Streamlined, in attractive grey and black colors, it produces temperatures down to 36° F.

MODEL	BTU/HR 15" MTD	LIST PRICE
OC 44	4,000	\$120.00
OC 48	5,100	148.00
OC 58	7,500	161.00
OC 84	11,000	210.00
OC 128	15,500	322.00
OC 168	23,000	370.00

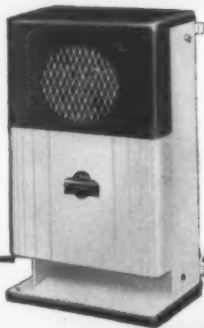
ZERO-BREEZE LOW TEMP UNIT



A low temperature unit equipped with automatic electric defrost . . . wall-mounted model . . . produces temperatures from +20° F. to -20° F. . . defrosts automatically on each off-cycle of condensing unit.

MODEL	BTU/HR 10" MTD	LIST PRICE
WZL 60	3,900	\$325.00
ZB 120	7,200	425.00
ZB 150	11,000	615.00
ZB 180	14,500	655.00

ALSERVICE REACH-IN PANEL UNIT



A compact cooling unit for all utility refrigeration applications. Designed to meet a growing demand for medium capacity units to balance condensing units of 1/4, 1/2, or 3/4 HP. Especially adapted for reach-in and small walk-in boxes.

MODEL	BTU/HR 15" MTD	LIST PRICE
RI 15	2,000	\$ 94.00
RI 25	2,250	99.00
RI 30	3,000	114.00
RI 40	3,250	149.00
RI 45	6,150	169.00

ALSERVICE DOWN-DRAFT UNIT



An efficient, down-draft cooling unit employing new ideas in refrigeration. . . May be converted to controlled humidity Food Conditioner by adding the control assembly package.

MODEL	BTU/HR 15" MTD	LIST PRICE
UC 63	8,000	\$211.00
UC 100	12,500	261.00
UC 125	17,500	477.00
UC 200	24,000	517.00

Bigger Profits for you and Greater Profits for the user with the Amcoil Food Conditioner. Now available in three different models.

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Carroll Color Patent
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25-27 LEXINGTON STREET • NEWARK, N. J.
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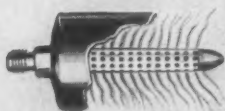
"KEEP THIS ILLUSTRATED PRICE LIST"

DESIGN..
... MAKES THIS REFILLABLE
DEHYDRATOR MORE EFFICIENT

This product is available under L-126.



Cross section of Type 743 Henry Dehydrator.



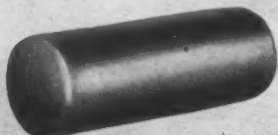
Greater Efficiency Because of Patented Dispersion Tube. Entire volume of the dehydrant is exposed to penetration by refrigerant.



Strainer Tube Can Be Easily Cleaned or Replaced. The reinforced monel strainer tube is silver soldered to the outlet fitting eliminating by-passing of the refrigerant.



Abso-Dry Pressure Sealing Process. Loosening of seal cap prior to installation produces hissing sound due to escape of dehydrated air indicating that dehydrant is absolutely dry.



One Piece Drawn Brass Shell. Type 743 Dehydrators in the 6" length are drawn in dies so that they have only one joint—larger sizes have soldered end caps at both ends.

Easy to clean! Easy to restore to original efficiency by merely replacing the dehydrant! These are your first reactions when you remember field problems encountered in servicing Refrigeration and Air Conditioning installations. Apart from the refillable feature, however, Type 743 Henry Dehydrator should be the choice of anyone interested in more efficient removal of moisture in a system. This is because many of the standard Henry features of design and construction that have made Henry Dehydrators the choice of the Industry are incorporated in this refillable dehydrator. You will find these features described in detail on the left.

Type 743 Refillable Dehydrator is available in a series of sizes and capacities that will take care of the majority of commercial installations. Best of all, the unit is so reasonably priced that it will pay any service or contracting organization to use it as standard equipment.



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New York 16, N. Y.
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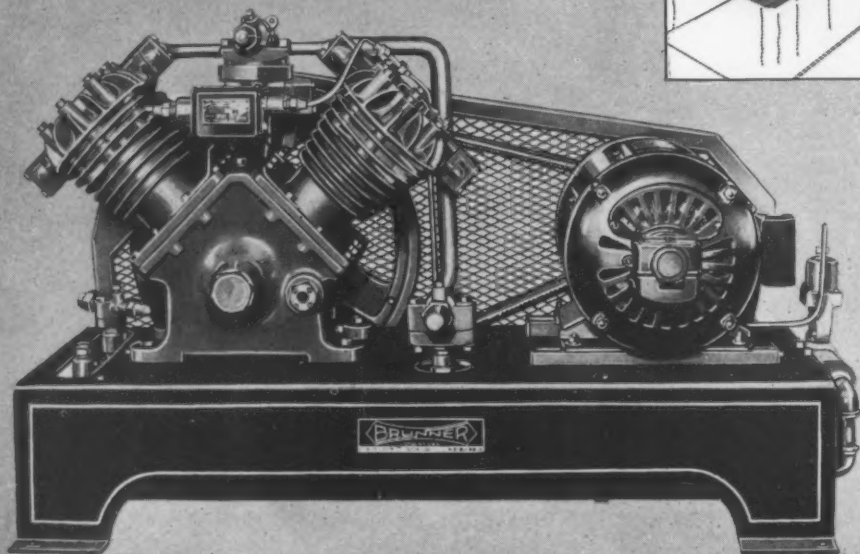
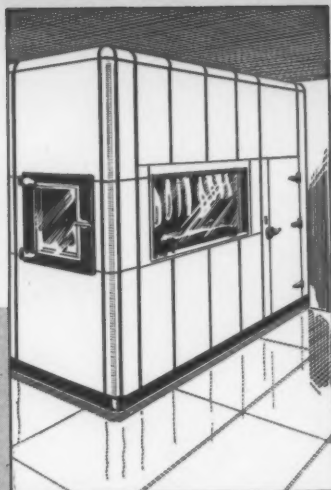
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AMMONIA VALVES • FORGED STEEL VALVES AND FITTINGS FOR OIL, STEAM AND OTHER FLUIDS

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Regardless of how well it is built

**...YOUR COOLER IS NO BETTER
THAN ITS CONDENSING UNIT!**



Appearance, quality of materials that enter into its production, and proper insulation are, of course, important factors in the construction of a refrigerated cooler. But of what avail all of these advantages if it is equipped with an inferior condensing unit—the heart of its refrigeration system? And remember that the compressor is the most important part of the condensing unit.

If you are contemplating placing an order for a cooler of any type, specify that it be equipped with a reliable condensing unit... a BRUNNER UNIT. Brunner engineers are experts in the design and construction of industrial and commercial refrigeration condensing units. Their specialized experience of more than 37 years in the design and production of compressors, qualifies them to give sound and valuable advice on any refrigerating problem.

They are constantly rendering this service to designers and builders of all types of coolers—reach or walk-in—or for locker plants. This specialized experience has enabled them to design refrigeration condensing units to meet the refrigeration requirements of any type of cooler. Brunner Units have established an enviable reputation for service stability and accessibility as well as

for reliability, efficiency and economy in thousands of applications throughout the world.

Ask Brunner to explain the new refinements of design and closer tolerances of their condensing units. There is a Brunner factory representative near you ready to discuss any problem of refrigeration you may have. He will be glad to see you. Write.



The Curtain is Rising on the Performance

YOU CAN'T AFFORD TO MISS!

● **PEERLESS OF AMERICA** is getting ready to announce new products and designs in Refrigeration and Air Conditioning Heat Exchange Equipment. The show you have been waiting for is scheduled for performance, now that restrictions on manufacture have been eased. We are getting ready to release to you details about our new designs and products. This *IS* the *big show!* Pent-up demand in the market will bring on the *big crowds!*

For this show to be a success we must have your correct mailing address so that we can keep you informed of our new products. To place your name on our mailing list, simply fill out the coupon below and mail today.

PEERLESS of AMERICA, Inc.
MARION, INDIANA, U. S. A.

Yes, I want a front seat for the show when **PEERLESS** introduces new products and designs. Please place my name on your mailing list for information concerning them.

Name.....Title.....

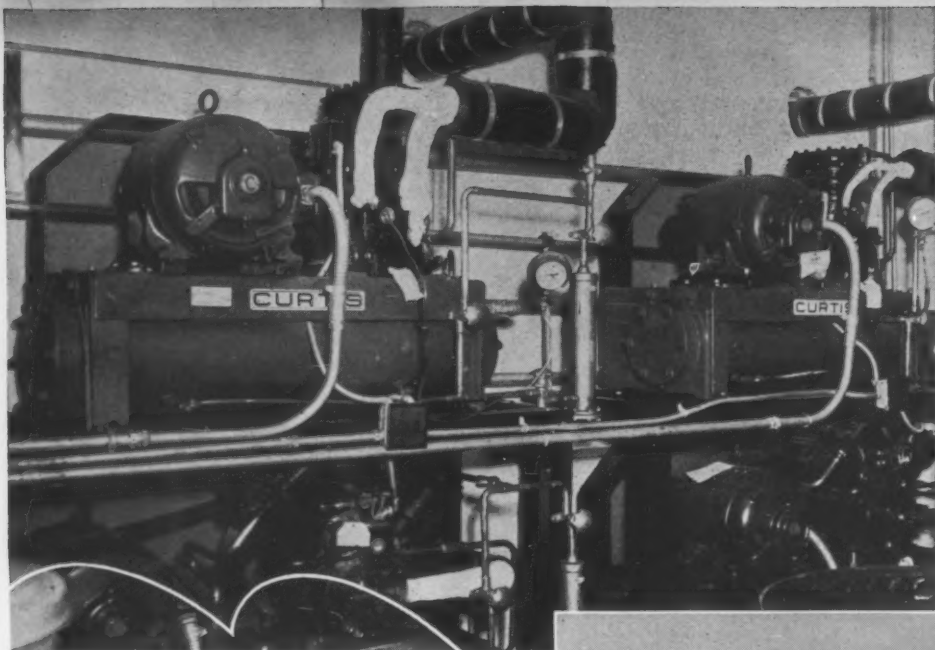
Company.....

Street.....

City and Zone.....State.....

**CLIP
and
MAIL
TODAY**





At Left: A part of the Curtis Compressor equipment serving the refrigerating requirements of the plant.

Below: Exterior of locker plant — 830 lockers.



CURTIS REFRIGERATION

- Is the Heart

of This Efficient LOCKER PLANT

Refrigeration dealers can not only profit by constructing new locker plants, but there is profit to be gained in rebuilding and modernizing plants that are not adequately refrigerated or insulated. In many locker plants throughout the country, CURTIS Refrigerating Units are proving the answer to the demand for dependable, efficient, trouble-free performance throughout an exceptionally long machine life.



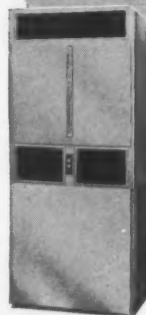
WRITE FOR COMPLETE STORY ON THIS UP-TO-DATE
CURTIS-EQUIPPED LOCKER PLANT

Bulletin RX-3 will be mailed on request

CURTIS REFRIGERATING MACHINE DIVISION
of Curtis Manufacturing Company

1915 Kienlen Avenue

St. Louis 20, Missouri



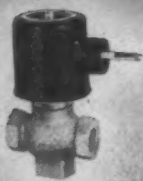
3 and 5-ton Packaged-Type Air Conditioner.

Ask about Curtis Air-Conditioning Equipment, too.



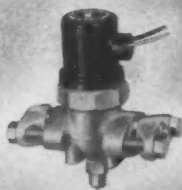
B-456

FOR VICTORY BUY MORE WAR BONDS AND STAMPS



No. 663-2—This reliable valve, like all "DL" solenoids is designed for use with any fluid that will not attack brass, furnished with many sizes of outlets, 1/8", 3/16" and 7/32"

Nominal capacity—liquid line
1/8" outlet 1-1/2 tons from 2-2/3 tons Maltby
3/16" outlet 3 tons from 6-1/2 tons Maltby
7/32" outlet 5-2/3 tons from 8-2/3 tons Maltby
3/8" female N.P.T. connections.



No. 666—The No. 666 is a heavy duty, large capacity pilot operated valve which requires a pressure drop of 1-1/2 to 4 psi to operate the piston when used with refrigerants, 5 psi are water. It is made with 3 sizes of outlets, 1/2" and 3/4". Available threaded or flanged for various size inlet pipes.

Nominal capacity—liquid line
1/2" outlet 15 tons from 23 tons Maltby
3/4" outlet 17 tons from 34 tons Maltby



No. 661—The No. 661 is of the pilot operated type and requires a minimum pressure drop of 1 psi to operate the piston.

Nominal capacity—liquid line
1/8" outlet 2-1/2 tons from 12 tons Maltby
1/4" outlet 3 tons from 12 tons Maltby

FOUR WIRE COIL

One of the features of "DL" solenoids preferred by jobbers and service men is the dual 115-230 volt 4 lead coil. This coil can be used on either 115 volt 60 cycle or 230 volt 60 cycle current by connecting the 4 leads in the right sequence. Correct wiring diagram is shown right on the coil—saving a great time error.

Note these Features of "DL"

- 1 POWERFUL — Ample power to lift against high pressures.
- 2 QUIET — Design of plunger and guide tube minimizes objectionable a-c hum.
- 3 EASILY INSTALLED — Substantial mounting boss on valve body makes for easy, rigid installation.
- 4 LONG-LIVED — Valve bodies are of close-grained, non-porous cast brass.
- 5 COILS are of moisture-proof construction.
- 6 POSITIVE CLOSING — Nonmagnetic needle and seat and strong "kick off" spring assure tight closing.
- 7 EASILY SERVICED — Can be disassembled and cleaned without disconnecting refrigerant lines or wiring.
- 8 ECONOMICAL — Draw little current. Replacement parts if required are inexpensive.

Specify "DL" solenoid valves and take advantage of these features.

SOLENOID VALVES

Drying A REFRIGERATION SYSTEM

Cartridge Dryers — Mechanical and Chemical

While it is necessary to use heat and vacuum or heated dry air to dry out a refrigeration system which has a large amount of water, cartridge dryers are very useful for removing small residues of moisture. Also their use—either permanently or at intervals—helps protect the system against accidental introduction of moisture.

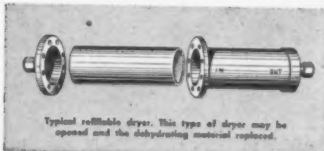
Cartridge dryers are usually placed in the liquid line, between the receiver and the expansion valve. The liquid refrigerant flows through the cartridge, and moisture in the liquid is caught and held by the drying material within the cartridge.

Two Types of Cartridge Dryers

Cartridge dryers are of two general types—the mechanical, or adsorption type; and the chemical type.

The "Adsorption" Type

The adsorption type of dryer is packed with a material which, finely divided, presents an enormous surface to which moisture may cling by capillary attraction. This process is known as "adsorption". The moisture is not changed chemically—still exists as moisture. Silica gel, activated alumina and zinc moss are adsorption materials commonly used.



Typical refillable dryer. This type of dryer may be opened and the dehydrating material replaced.

water from a refrigerant liquid. In addition to calcium oxide, calcium sulphate, calcium chloride, barium oxide and certain other chemicals are used in drying operations. Commercially prepared chemical dryers generally contain one of these chemicals.

Properties of Chemical Dryers

One of the refrigerant manufacturers lists the properties of these chemical dryers substantially as follows:

- "Anhydrous Calcium Sulfate—prepared in granular form, or cast in sticks. Dries somewhat, but does not cause trouble.
- "Calcium Oxide—removes water and acid by chemical action. Dries somewhat, cannot be used with sulfur dioxide but is satisfactory for other refrigerants. Rates as a fair dryer with a tendency to powder if excess moisture is present.
- "Calcium Chloride—may be used with all refrigerants, but is not rated as a dryer capable of reducing moisture content to a low level. Excess moisture produces a solution which is highly corrosive. Should be used with caution.
- "Barium Oxide—removes moisture by chemical action . . . powders badly after reaction with water.
- "Phosphorus Pentoxide—an excellent dryer, but its fine



Typical sealed dryer. Dehydrating material sealed in—not replaceable.

May Be Left in System

While adsorption type dryers often work more slowly than the chemical, they have the advantage that they may be left in the system indefinitely without harm. They do not heat, and seldom give trouble by powdering.

Chemical Dryers

Chemical dryers are packed with a material which takes up water by chemical action. A common material which is sometimes used in chemical dryers is calcium oxide, or "quicklime". Most people remember the chemical laboratory experiment where a few drops of water are placed on a lump of quicklime. The lime gets hot, and then disintegrates into a dry powder. If not too much water is used, the moisture vanishes completely.

A number of materials have this property of entering into chemical combination with water. They will remove

powdery form makes it difficult to handle and produces excessive resistance to flow of gas or liquid. A mixture with quartz has been accorded limited use.

It must be noted that nearly all of the chemical dryers give off considerable heat when absorbing moisture. Barium oxide and calcium chloride are likely to be particularly active in heating. As a result, many service men are instructed not to leave the job when a barium oxide dryer is used. A usual procedure is to put the dryer on for an hour or more while the service man watches it. It is then removed, and often replaced by an adsorption type dryer.

Generally it is not recommended that any chemical dryer be left in the system longer than 24 hours.

Cartridge dryers are extremely useful—should be a part of the service man's equipment. However, they should always be used with careful attention to the directions, and only on the refrigerants specified by the dryer manufacturer.

DETROIT LUBRICATOR COMPANY Division of AMERICAN RADIATOR & Standard Sanitary Corporation

DETROIT LUBRICATOR COMPANY



General Office: DETROIT 8, MICHIGAN

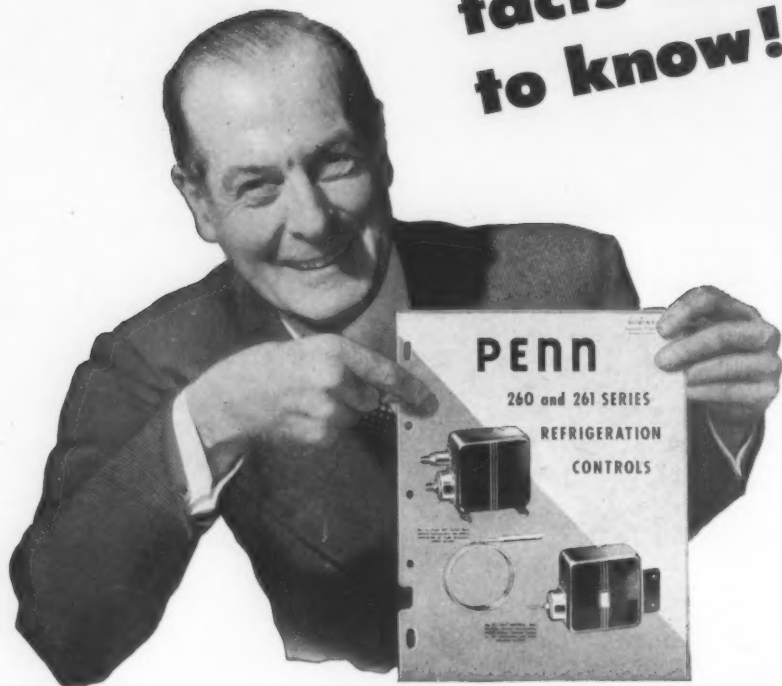
Division of AMERICAN RADIATOR & Standard Sanitary Corporation

Canadian Representative — RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricants

Reprints of these articles, furnished to fit your service book, available on request. Write for your copy.

**This bulletin has
facts YOU want
to know!**



• You'll want a copy of this news-packed bulletin. It's filled with vital facts on PENN 260 and 261 Series Refrigeration Controls. Complete with pictures and diagrams, it will show you how to provide adequate protection for deep freezers and commercial low temperature boxes.

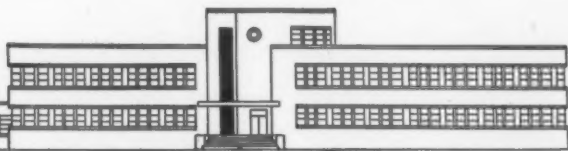
The 260 Series are "single" temperature or low side pressure controls. Built in single pole construction, they close the contacts on temperature or pressure rise and open the contacts on temperature or pressure drop. The 261 Series

Dual Control incorporates the added protection of high pressure safety cut-out.

Send for your copy of this helpful 8-page bulletin today. You'll find it a real aid in assuring adequate protection for critical food supplies ... and it's yours absolutely free. Simply ask for Bulletin R-260-D.

Write *Penn Electric Switch Co., Goshen, Indiana*. Export Division: 13 E. 40th Street, New York 16, U.S.A. In Canada: *Powerlite Devices, Ltd., Toronto, Ont.*

PENN



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

The LITTLE Fellow

IN ITS first year of existence THE REFRIGERATION INDUSTRY has never run an editorial by the publisher. That's because we do not believe in personalized journalism.

Last month we succumbed to writing an editorial, not because we wanted to see our name in print, but because we are so intensely interested in seeing a strong top organization in the industry. We believe that so much more can be accomplished through a strong, well financed, long-range planning organization than by several smaller associations, each of which feels that its problems are different and that it has no interest in what the rest of the industry does.

That editorial was addressed to the manufacturers making up these various associations, but lo and behold! we got letters from smaller concerns—contractors, installation people, service men. Each of these people expressed their pleasure at the stand we took because they feel that much good can accrue to them from such a program.

One writer feels that if a set of standard trade practices could be adopted, his competitive situation would be cleaner and more profitable. A couple of jobbers have written in. One expresses the thought that his business would be greatly helped by published standard trade contracts; another feels that discounts, openly arrived at and scrupulously maintained, would help the whole industry. A service man writes of some of his troubles with his jobber—virtually the same thing as the jobber kicks about, except his kick is at a different level. He didn't say so, but we take his letter to mean that he, too, would like discounts openly arrived at and scrupulously maintained.

It is evident to us that all these men are interested in a general standardization throughout the industry. All credit to these fellows who have the farsightedness to see this. We believe the top industry men ought to recognize what the industry really wants. This whole situation reminds us of our Congress at Washington, or some of our administrations there, when they fly in the face of a recognized popular demand and follow a course of political expediency for the benefit of a few people at the top, rather than for the whole body politic.

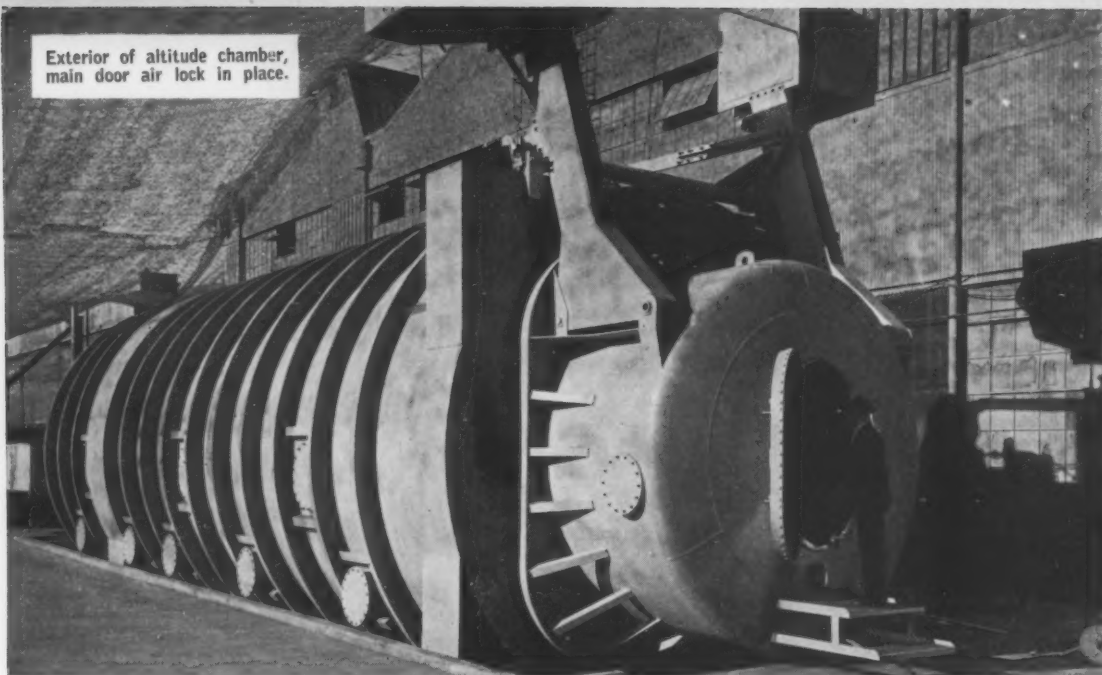
It always amazes us to see executives who have built a successful business, who have withstood all the difficulties of competition, who have arrived at the top of the heap, but who are so shortsighted they can't see over the edge of their desks, in matters of industry-wide interest and benefit.

This industry needs unity. It needs unity of program, of action. It needs long-headed planning and strong doing. Only through a strong SINGLE association can these things be accomplished. The game IS worth the candle.

Irving B. Hexter

Publisher.

Exterior of altitude chamber,
main door air lock in place.



Building a Refrigerated ALTITUDE CHAMBER

By Charles J. Lyall

North American Aviation, Inc.

THE importance of altitude testing equipment is widely recognized today, and it has been put to worthwhile use in testing aircraft equipment and in physiological and allied work.

As an aid in carrying out projected research and development activities, plans for construction of a reinforced concrete test chamber at North American Aviation were begun about two years ago, at a time in the war program when it was impossible to obtain boiler plate. We wanted a chamber large enough to permit the testing of an entire pursuit fuselage, rather than component parts, to enable more accurate test data to be obtained.

Editor's Note: This information was originally presented by Mr. Lyall at the recent Aviation War meeting of American Society of Mechanical Engineers in Los Angeles.

**This war-time testing
room duplicates tem-
peratures from -100°F.
up to 200° above zero**

In the test chamber, we wanted to be able to reproduce:

1. Varying air densities, or from sea level to a reasonable future altitude of 60,000 feet, with rates of change commensurate with reasonable rates of climb and dive.
2. A temperature range extending the established — 65°F. to — 100°F., and the plus 165°F. to 200°F.
3. All percentages of relative humidity, from the saturation points of rain, sleet or snow to the dehydration of desert operation.
4. Velocities from a point provid-

ing only necessary recirculation over the heat exchange surfaces to as high as practical, within the physical limits of a single stage fan application.

Finally, accurate automatic control of these four factors, to produce each separately or simultaneously, as the test in progress dictates.

The chamber is fabricated of $\frac{3}{8}$ " boiler plate, 17 feet in diameter by 55 feet in length with supporting hoop rings on 3' centers and a domed blind end of $\frac{5}{8}$ " plate. A channel support girdles the tank about two thirds of the distance aft of the open end, resting on two fixed position concrete pedestals, with two roller or moveable supports on concrete footings just aft of the main door. The main door, weighing approximately six tons and incorporating an air lock, cantilevers from a shaft position above the front girder to counterweights totalling 15 tons and is opened or closed in one minute by a 2 H.P. motor, gear reduced on a 1200-to-1 ratio.

Six two-foot diameter view ports

with multi-layer windows are located three each at eye level to the ground on one side and to the catwalk on the other, permitting visual examination of the entire working chamber while a test is in progress. Ten 18-inch access glands, five to a side, are staggered along the working floor level. The air lock contains single glass windows, all doors are rubber gasketed and the small inner door is built to withstand pressure from both sides, enabling us to operate the lock as a physiological chamber independently of the large chamber.

Insulation Installation

The entire chamber is insulated with nine inches of cork-board in with nine inches of corkboard in three 3" layers, the first layer held to the tank by the use of welded studs and clips, succeeding layers being wood skewered to the first layer and all corkboard set in cabin sealer compound. High density cork was used in the cork shoulders that carry the floor and fan loadings, with breaker trips of phenolic fibre carrying the false ceiling weight through the cork to rods below. After tuck pointing with a mixture of cabin sealer and cork dust a coating of aluminum paint was applied. All interconnecting refrigerant piping and pump are cork lagged.

After considerable deliberation be-

tween axial flow and centrifugal fans, we decided on the latter as being safer from ice accumulation unbalance. Our final selection was a double inlet, top horizontal discharge arrangement with backward bent, backward curved blades, and nickel steel shaft. The capacity ranges from 10,000 c.f.m. at 24" static pressure and 1700 r.p.m. to 50,000 c.f.m. at 3" s.p. and 1700 r.p.m., or approximately 75 miles per hour at the outlet with the possibility of coning down to 125 m.p.h. for radiator and enclosure testing.

The cooling coils mounted above and below the fan are 16" deep, 92" long by 45" wide, constructed of copper tubes and manifolds with aluminum fins spaced four to the inch. With a combined face area of 45 sq. ft., they have a capacity of a half million B.T.U. per hour, cooling 3500 lbs. of air per minute from—90°F. to—100°F., based on a methyl alcohol-acetone mixture as a cooling medium entering the coils at—110°F. and leaving at—105°F.

Incorporated within the coil housings are one row of fin type electrical heating elements with a heating or defrosting capacity of 216 K.W.

Both heating and cooling capacities were designed for a rate of

* * *

Interior view of test chamber during construction, showing insulation thickness.

change equivalent to the average temperatures encountered at all altitudes up to 60,000 ft. for a 7500 f.p.m. rate of climb.

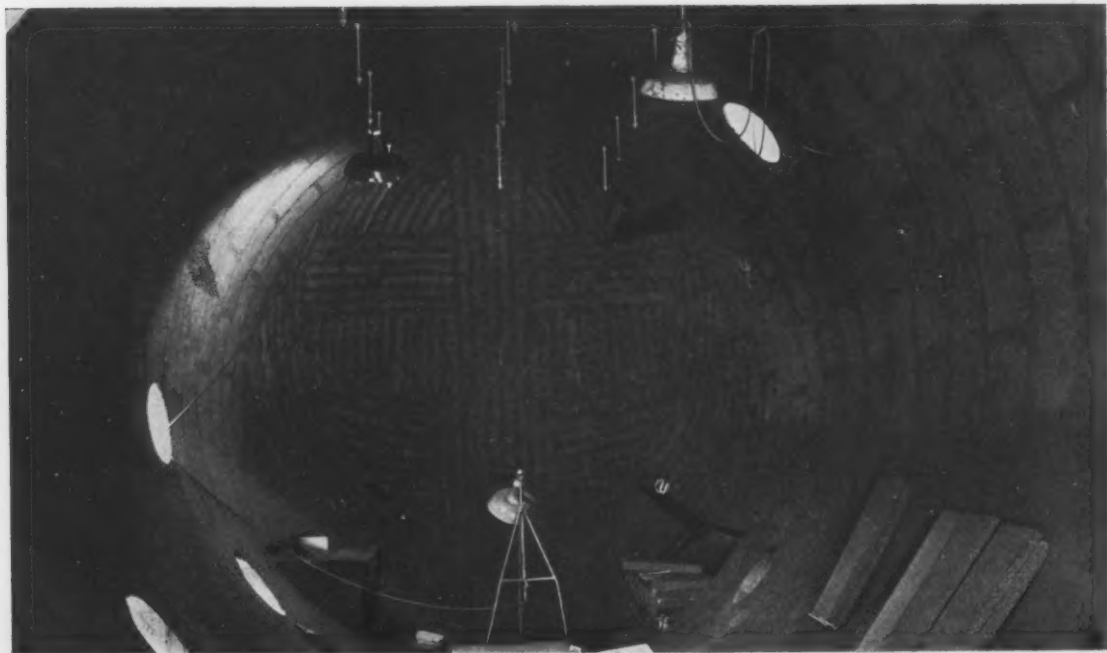
Refrigeration System

A sublimation tank of 1/4" boiler plate, 12' in length by 5' diameter, is mounted vertically and insulated with 12" of corkboard set in cabin sealing compound.

In operation, this tank will be filled with several tons of dry ice blocks over which the alcohol acetone solution is cascaded to the sump bottom, where it is picked up by a 7 1/2 H.P. positive displacement pump and circulated through the cooling coils, returning to the top of the tank to complete the cycle of heat absorption. The rejected heat is exhausted with the released CO₂ gas up through a 2' diameter stack which also serves as a dry ice chute for charging the system.

Our final selection in vacuum pumps was an electrically driven 100 h.p. duplex, double acting, positive displacement type. The water jacketed vacuum cylinders are 24" in diameter with a 10" stroke and are 90° opposed giving four pulsations to each of the 277 r.p.m. The piston displacement of 2895 cu. ft. per min. will give us a 7500 f.p.m. rate of

Continued on page 54



RTU

News • Laws • Trends

● REFRIGERATOR QUOTAS

PRODUCTION QUOTAS in the third quarter for most of the 265,000 household refrigerators scheduled by WPB have been announced. Our most recent list shows the following firms and figures:

Frigidaire, 56,445; General Electric, 47,501; Kelvinator, 27,825; Seeger-Sunbeam, 25,639; Westinghouse, 21,068; Servel, 20,272; Norge, 14,369; Philco, 12,090; Ranney, 2,500; Admiral, 7,952; Crosley, 11,067; Gibson, 8,974. According to these figures, 9,298 units are still to be assigned to meet the 265,000 quota for the third quarter.

In announcing the quotas, WPB said that when daily rate of production reaches the rate of distribution, all restrictions will be removed, and predicted this might be by Jan. 1.

● MOTOR OUTLOOK

PRODUCTION OF fractional horsepower motors may increase to a total of 800,000 units per month by the fourth quarter of 1945, members of the fractional horsepower motors labor advisory committee were told at a recent meeting with WPB officials.

WPB said that for some time to come there will be a large continuing military demand for small motors, with the likelihood that for at least three to five years there may be a larger civilian demand for small alternating-current motors than the industry can probably meet. Steps are being taken to assure a supply of small motors as one of the important aids to reconversion.

Order L-341 is being retained, and will require continuous inventory reporting by those who use more than 450 such motors per quarter. Thus small users will be protected and should be able to fill their needs. Order L-123, which required priority rating to place orders for fractional horsepower motors, has been evoked.

● HOUSEWIVES SPEAK

SEVENTY PER CENT of the 2,467 homemakers queried by Crowell-Collier Publishing Co. in a recent survey preferred electric refrigeration to any other kind. All but 8 per cent knew the brand name of their preference. Most popular size was 6 cu. ft., with the 5-foot unit next in line. More than 32 per cent planned to buy a new unit when they became available, another 13 per cent

were not sure. Most-wanted conveniences included automatic defrosting, frozen food storage, larger capacities, and revolving shelves.

● LOCKER-FREEZER TIE-UP

WITH AN EYE to the wide popular acceptance of home storage units for frozen foods, most of the nation's 6,000 frozen food locker operators are currently developing plans to sell and service the home models when production of them is resumed.

In a poll conducted recently by the National Frozen Food Locker Association, more than 80 per cent of the operators indicated their interest in acting as distributors for the home units after the war.

The model for home use most widely advocated by the operators will be a unit of from 5 to 12 cu. ft. capacity designed primarily for storage of foods already frozen.

Contrary to reports that an increase in home storage units will impair locker plant growth after the war, the operators believe that larger sales of home models will create a greater demand for locker plant facilities. Already they have predicted the construction of 5,000 new locker plants within five years after V-J Day.

● ROOM COOLER "TRIAL"

MERCHANDISING OF semi-portable room air conditioners on the familiar "try before you buy" plan used by small appliance dealers will be tried by Westinghouse in the postwar period, according to H. F. Hildreth, manager of the company's refrigeration specialties department.

Dealers will put the units into homes and commercial establishments for a small installation fee. If the prospect decides to buy, installation fee is applied to the cost; if not, the fee helps to offset cost of the trial installation.

Demand is expected to top 100,000 units in the first year of unrestricted production. This includes both new and replacement installations.

● THEY'LL STILL FREEZE

FROZEN FOOD CABINET manufacturers anticipate a continuation of home freezing in volume in the postwar period as indicated in a survey recently completed by *Good Packaging* magazine. This is contrary to the popular belief held in frozen food trade channels that the end of the war emergency would considerably reduce the volume of home freezing.

● CLARIFYING ACTION ASKED

REMOVAL OF CERTAIN WPB limitation orders has led customers to expect immediate delivery of condensing units. Rated orders now on manufacturers' books prevent the early shipments desired. Concern over this condition was expressed at the recent meeting of the Refrigeration Condensing Unit Manufacturers Association in Cleveland.

In the hope of inspiring clarifying action, the following letter was sent to Chairman J. A. Krug of WPB, outlining the present confused situation and urging consideration of the following:

A. A direction to Priorities Regulation No. 1 to hold
Continued on page 48

DAVISON'S SILICA GEL



goes further... does more

Davison's Silica Gel was developed under close collaboration with refrigeration engineers who knew only too well the short-comings of ordinary drying agents. . . . Recognized as a basic contribution to the refrigeration industry, Davison's Silica Gel ends moisture troubles and other danger-creating elements that stop most drying agents. . . . It is the complete drying agent, as these advantages found in Davison Silica Gel prove.

- 1 It is processed especially for the dehydration of refrigerants.
- 2 Its scientifically-determined particle size assures you that the refrigerant will not channel — will be distributed evenly throughout the cartridge.

- 3 This even distribution of the refrigerant makes it possible for it to be in complete contact with the entire pore-surface area at all times.
- 4 It removes acids . . . corrosive compounds and other impurities . . . in addition to moisture . . . instantly.
- 5 Its capacity for moisture is not affected by oil.
- 6 It will not cake nor powder.
- 7 It will not attack metals or alloys.

To get this COMPLETE DRYING AGENT that is effective on Freon, Methyl Chloride, Sulphur Dioxide, etc., specify Davison's Silica Gel from your jobber . . . in factory-charged dehydrators or in bulk for refill.

THE DAVISON CHEMICAL CORPORATION
Progress through Chemistry **D** BALTIMORE-3, MD.

Canadian exclusive sales agents for DAVISON'S SILICA GEL: CANADIAN INDUSTRIES LIMITED, General Chemicals Division



Bush C.P.C. BLOWERS

A compact, efficient unit for reach-in boxes providing maximum cooling in minimum space. Built to rigid BUSH engineering standards. Provides proper humidity and uniform air distribution. Cold air discharge against ceiling — no direct blast

on contents of box. Finished in gleaming white baked enamel. The BUSH C.P.C. Blower . . . and other BUSH Heat Transfer Products . . . are illustrated and described in the new BUSH Catalog which we'll gladly send you on request.



BUSH

HARTFORD, CONNECTICUT

415 LEXINGTON AVENUE, NEW YORK ★ 549 W. WASHINGTON BOULEVARD, CHICAGO
EXPORT ADDRESS: 13 EAST 40TH STREET, NEW YORK ★ CABLE "ARLAB"

This Dealer
gets down into

Pay Dirt!



Low temperature storage room at Circle Fisheries, Erie, Pa. These facilities enable greatly expanded sales of seafoods.



Exterior of Circle Fisheries freezer room, Refrigeration equipment shown at lower left.

COMMERCIAL refrigeration business is where you find it—and if you're ingenious enough and alert enough to provide prospective customers with a complete contracting service, you can work your way into some real "pay dirt."

That has been the experience of the Apfel Engineering Co., Erie, Pa. contractor firm, which covers the northwest Pennsylvania territory. Under the management of John

A. Apfel, owner, and Carden S. Henn, refrigeration engineer who collaborates in the sales work, this organization has set itself up to do a complete contracting job—construction, insulation, and refrigeration equipment.

Now located at 308 West 8th St., the company recently purchased larger facilities at 710 French St., and plans to occupy the new location as soon as conditions permit.

The company handles all types of industrial and large commercial and air conditioning installations, working with both ammonia and Freon equipment. Three men are in Apfel's permanent installation crew. Supervised by Mr. Apfel or Mr. Henn, these men, supplemented by temporary employees when and as required, handle all the details involved in jobs ranging from low temperature storage rooms to the building and equipping of a complete locker plant.

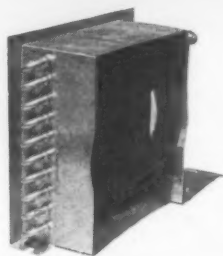
There are definite advantages to operating on a "packaged installation." *Continued on page 38*

View of blower unit used in the Circle installation, a Kramer Trenton "Freezing Shower."



"D" series Grunow condensing unit, showing component parts.

Modern type condenser used on all models.



FIRST OF
A SERIES

PROFITS in GRUNOW Service

By Elmer H. Wiedwald

TO MANY service men, the thought of servicing Grunow refrigerators is enough to make them shudder. With a little common sense and a few simple "do's" and "don't's", the Grunow refrigerator is one of the easiest boxes on the market to service. In this and succeeding articles, we will cover the service field and limit our shop repairs to those that the average operator can accomplish with a small investment in equipment. Fortunately, with the exception of the compressor assembly, most Grunow repairs can be made in the customer's home.

The first Grunow refrigerator came out in 1933 and was designated as the Model "C" by the factory. This is the only semi-hermetic model of the line, since it employs an external seal and stator. The compressor-motor assembly was mounted on three rubber balls, and the cooling of the condenser was accomplished by a two-blade fan fastened to the rotor by one cap screw. All other models use a separate fan for the circulation of air.

On the Model "C" box, the evaporator is located on the right-hand side of the liner and porcelain baffles are used. We will endeavor to cover all the service complaints on this model which occur most frequently in the field.

One of the most frequent causes of Grunow service calls is air in the

It's one of the easiest units in the field to do work on, the author says—and there's a nice bit of change in it, besides

system. This is due to the natural breaking down of the Carrene, faulty purging by other service men, and leaks.

To properly purge a Grunow system, the following procedure should be followed:

1. Set the thermostat on its highest point.
2. On "C" models, cover the condenser to prevent the circulation of

air, or, on other models, stop the fan with a large cloth.

3. Make sure the machine has been running long enough to heat up the compressor and the upper part of the condenser. If the compressor is very hot and the condenser is still cold after an hour of running time, there is probably enough non-condensable in the system to prevent the hot gas from entering the condenser.

4. Attach your purging tool with gauge on service port and check head pressure. If pressure is 5 lbs., or over, open purge screw and let out the non-condensable for about five to seven seconds. Repeat this operation until the entire float or Carrene meter is hot to the touch.

After running the unit for about 15 to 20 minutes with the fan running, check the head pressure again. In a

View from rear of cabinet of a Grunow "D" series model, showing condensing unit, location of electrical unit, and liquid line location.



75° room, the head pressure will be about 2 to 4 inches vacuum if properly purged. If not, repeat the above procedure for purging, and then check. If the head pressure continues to build up, there is probably a low-side leak in the system.

We have described the purging process first, since nearly all service operations in a Grunow are completed with purging. Now for the service complaints:

Long Running Time or No Refrigeration—

A. Plugged Condensers. On Model C units, the most common cause is a plugged condenser, air in the system, or a combination of both. Since most Grunow condensers are two-pass, the best way to check them is to use a flashlight to see if the second, or back-pass, is not plugged. Many times a condenser may look clean on the surface, but a close examination will reveal the second pass plugged completely.

One of the easiest ways to clean these condensers is to heat up your methyl cylinder in *hot water* and blow out the dirt with the high pressure gas. Be sure to warn the customer that the dirt will fly! It is a good practice to purge any machine with a plugged condenser or stalled fan to relieve non-condensable.

B. Rear Air Duct Installed Improperly. In some cases, the customer will remove the rear air duct and will then install it upside down. As a result, the hot air pockets in the machine compartment and over heats the unit.

C. Bad Door Seal. Check the door seal with the old standby—a dollar bill. If gasket is soft or worn, replace. A faulty door seal will also cause sweating of the box interior and necessitate frequent defrostings.

D. Faulty Thermostat. The customer may set the control too cold, or the thermostat may be defective. Frequently, water will freeze in the bellows of the control and allow the machine to run continuously. Obviously, the best procedure is to replace the control.

E. Too Much Carrene. An overcharge of gas will give the same indication on a Grunow as on any other capillary or high-side float system. Push down the sponge rubber covering on the suction line as it leaves the cabinet in the rear of the machine

TABLE I.
CARRENE and OIL CHARGES in LIQUID OUNCES (32 Oz.=1 Qt.)

Model	Unit Type	Oil Charge	Total Carrene Charge	Carrene Drain-out Charge	Carrene Left in Meter	Carrene Left in Compr.	Carrene Left in Evap.
50-C	C	24 Oz.	40.5 Oz.	27.0 Oz.	6.0 Oz.	2.0 Oz.	5.5 Oz.
50-D	D	36 Oz.	41.0 Oz.	27.0 Oz.	6.0 Oz.	2.5 Oz.	5.5 Oz.
50-G	C	24 Oz.	40.5 Oz.	27.0 Oz.	6.0 Oz.	2.0 Oz.	5.5 Oz.
60-C	C	24 Oz.	43.5 Oz.	30.0 Oz.	6.0 Oz.	2.0 Oz.	5.5 Oz.
60-G	C	24 Oz.	43.5 Oz.	30.0 Oz.	6.0 Oz.	2.0 Oz.	5.5 Oz.
70-G	C	24 Oz.	43.5 Oz.	30.0 Oz.	6.0 Oz.	2.0 Oz.	5.5 Oz.
75-C	C	24 Oz.	43.5 Oz.	30.0 Oz.	6.0 Oz.	2.0 Oz.	5.5 Oz.
46-D	D	36 Oz.	48.0 Oz.	33.5 Oz.	6.0 Oz.	2.5 Oz.	6.0 Oz.
54-D	D	36 Oz.	48.0 Oz.	33.5 Oz.	6.0 Oz.	2.5 Oz.	6.0 Oz.
65-D	D	36 Oz.	51.0 Oz.	36.5 Oz.	6.0 Oz.	2.5 Oz.	6.0 Oz.
65-SD	D	36 Oz.	51.0 Oz.	36.5 Oz.	6.0 Oz.	2.5 Oz.	6.0 Oz.
80-D	D	36 Oz.	54.0 Oz.	33.5 Oz.	6.0 Oz.	2.5 Oz.	12.0 Oz.
80-SD	D	36 Oz.	54.0 Oz.	33.5 Oz.	6.0 Oz.	2.5 Oz.	12.0 Oz.
82-DSD	D	36 Oz.	54.0 Oz.	33.5 Oz.	6.0 Oz.	2.5 Oz.	12.0 Oz.
82-HSD	H	36 Oz.	54.0 Oz.	33.5 Oz.	6.0 Oz.	2.5 Oz.	12.0 Oz.
50-M	M	36 Oz.	40.5 Oz.	32.0 Oz.	6.0 Oz.	2.5 Oz.	None
50-S	J	36 Oz.	40.5 Oz.	32.0 Oz.	6.0 Oz.	2.5 Oz.	None
51-D	K	36 Oz.	44.0 Oz.	35.5 Oz.	6.0 Oz.	2.5 Oz.	None
51-M	M	36 Oz.	44.0 Oz.	35.5 Oz.	6.0 Oz.	2.5 Oz.	None
52-D	K	36 Oz.	44.0 Oz.	35.5 Oz.	6.0 Oz.	2.5 Oz.	None
56-SD	K	36 Oz.	44.0 Oz.	35.5 Oz.	6.0 Oz.	2.5 Oz.	None
58-M	M	36 Oz.	44.0 Oz.	35.5 Oz.	6.0 Oz.	2.5 Oz.	None
60-S	K	36 Oz.	44.0 Oz.	35.5 Oz.	6.0 Oz.	2.5 Oz.	None
61-D	K	36 Oz.	44.0 Oz.	35.5 Oz.	6.0 Oz.	2.5 Oz.	None
61-M	M	36 Oz.	44.0 Oz.	35.5 Oz.	6.0 Oz.	2.5 Oz.	None
62-D	K	36 Oz.	44.0 Oz.	35.5 Oz.	6.0 Oz.	2.5 Oz.	None
67-M	M	36 Oz.	44.0 Oz.	35.5 Oz.	6.0 Oz.	2.5 Oz.	None
67-D	K	36 Oz.	47.5 Oz.	39.0 Oz.	6.0 Oz.	2.5 Oz.	None
67-SD	H	36 Oz.	47.5 Oz.	39.0 Oz.	6.0 Oz.	2.5 Oz.	None
70-R	R	36 Oz.	47.5 Oz.	39.0 Oz.	6.0 Oz.	2.5 Oz.	None
82-R	R	36 Oz.	47.5 Oz.	39.0 Oz.	6.0 Oz.	2.5 Oz.	None
82-D	H	36 Oz.	51.0 Oz.	42.5 Oz.	6.0 Oz.	2.5 Oz.	None
82-SD	H	36 Oz.	51.0 Oz.	42.5 Oz.	6.0 Oz.	2.5 Oz.	None
1937-All	W	34½ Oz.	34 Oz.	22 Oz.	6 Oz.	2.5 Oz.	3.5 Oz.

compartment. A normal charge will allow the suction line to be about 15 to 20° cooler than room temperature.

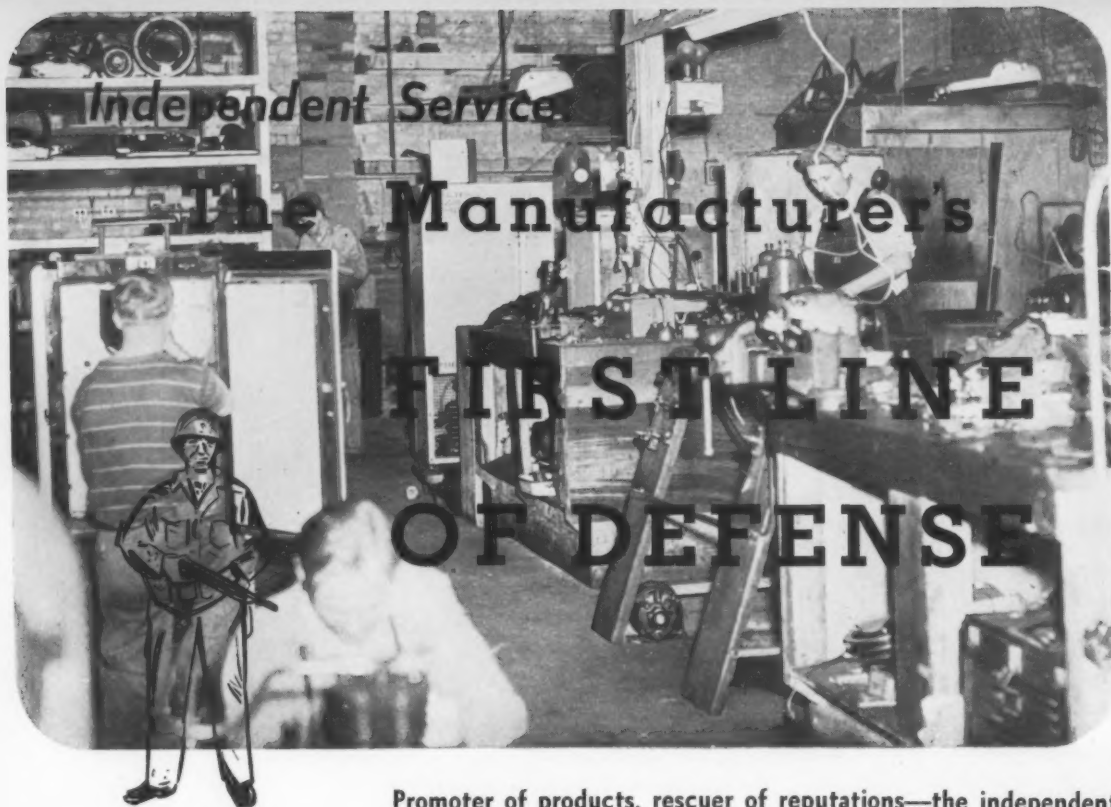
If the suction line is colder than this and allows it to refrigerate as far as the pump, the machine is overcharged to such an extent that it would probably take an hour or so of purging in order to correct. If there is only a slight overcharge, it can be removed by purging, following the outline described earlier. If the machine indicates a heavy overcharge, the following procedure should be followed:

Shut the machine off and disconnect the line cord. The air duct is

then removed by loosening the four screws and lifting the air duct up slightly so that the screw heads will go through the larger holes. It is not necessary to remove the screws entirely. Take a ⅝" flare nut wrench and disconnect suction line.

At this point, it is a good policy to have on hand a clean container which will hold at least 48 ounces. Porcelain containers which are calibrated in ounces can be obtained from medical supply companies at a very nominal price. The liquid line can now be opened. Do not use a pipe wrench to hold the solder fitting.

Continued on page 55



Promoter of products, rescuer of reputations—the independent has battled his way to recognition in the commercial field. This article tells why it will pay to use him even more in post-war

By Jack Warren

THE much maligned independent service man or company is not a bad fellow at all when you remove the dragon's head and cloak with which he has been costumed by some of the industry's major manufacturers.

A poll of national service managers of the major volume appliance manufacturers will bring out the surprising advice that the appliance business owes the independent service man a debt of gratitude it will never be able to repay.

During the war period, when even some of the well-established appliance dealers were forced to close their affairs or at least give up their service activities, this additional service load in those communities was shifted to the independent service man.

He came through to save, salvage and in some instances re-establish the reputation of service reliability of some of the big names in the appliance business.

Among the commercial refrigera-

tion and air conditioning equipment manufacturers, the independent service contractor has for some years been the sturdy mainstay on their installation and service problems. He has brought order, system, dependability and satisfactory performance to a branch of the refrigeration industry which was once in a chaotic stage. In these fields he has demonstrated his usefulness and established the independent service business as a major factor in the marketing of these products.

What's He Look Like?

What is an independent service man? Who is this ogre, damned, abused and berated by so many persons, and at the same time praised and supported by a large following composed of the more progressive thinkers in the appliance business.

He is usually in his community an outstanding service man. Recognizing the limitations for advancement and progress in the manufacturer's distributor or dealer's service departments, he sets himself up in a small

independent service business. This beginning is usually on a very small and conservative basis.

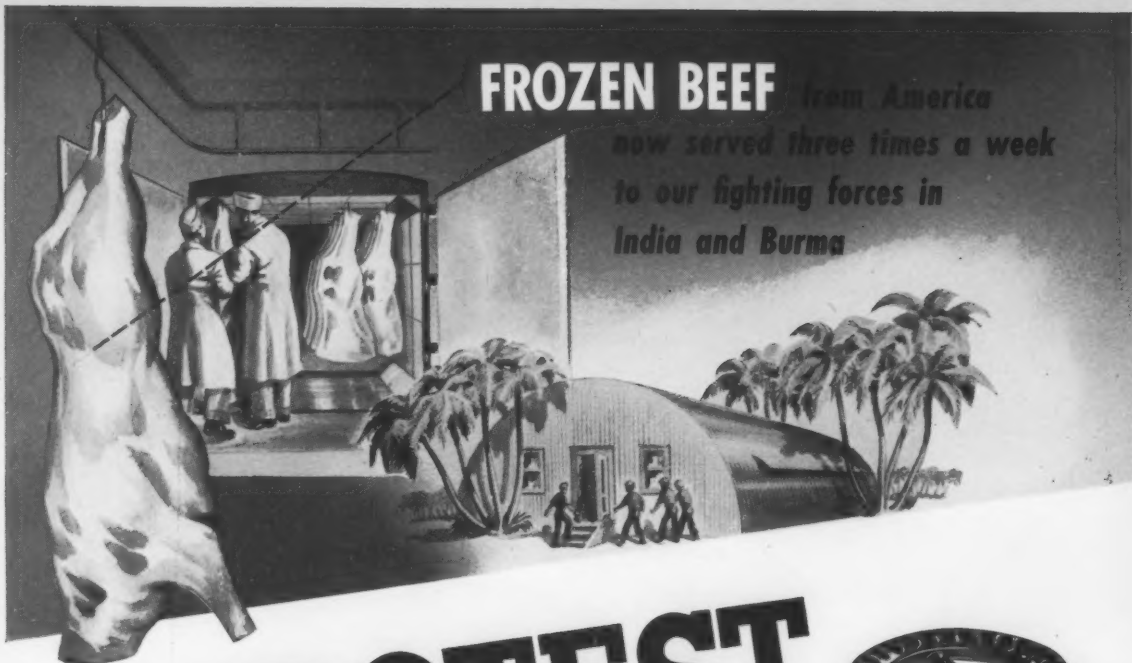
He progresses from an operation where he does all the productive work, his wife handling the books and answering the telephone, to a point where the volume of service work will support a business location, a payroll, and an inventory of stable sound service merchandise.

This evolution into an established business is not an easy road, and the way is marked with many failures.

Once the independent service man is well established, he is as strong or stronger in his province than many of his antagonists.

He services all makes of domestic and commercial appliances in his particular field. He carries a good sound inventory of important service parts. He employs the best men in the area. He trains men to become more capable and competent in service work. He furnishes prompt, careful and dignified customer service. He charges a profitable rate for his service.

Continued on page 52

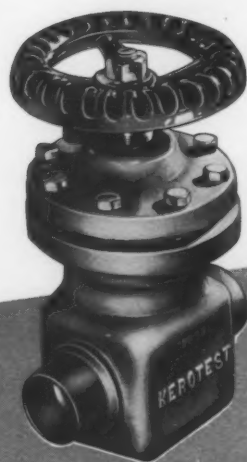


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valves



Fresh beef for our troops in India and Burma—that's impossible! But, leave it to the refrigeration industry to solve these "tough" problems—and keep our fighting troops healthy. Special equipment had to be designed, for cold-storage warehouses, refrigerated ships, cars and trucks, but the refrigeration industry took them all in stride and came up with the answers—and the boys get fresh beef three times a week.

Wartime accomplishments like these will mean "great things" to come for the peacetime air conditioning and refrigeration industry.

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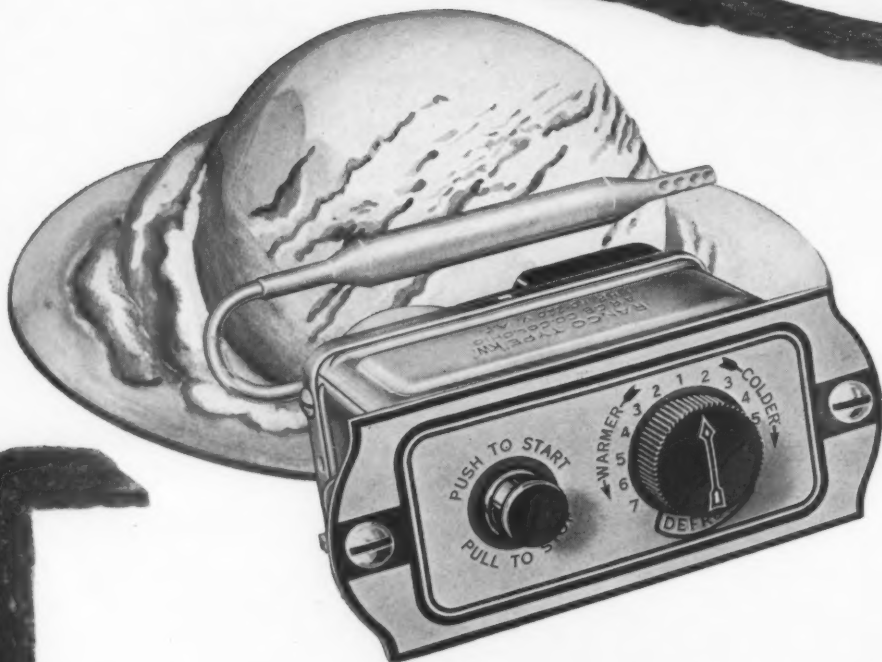
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Let's Treat the Customer Kindly

In these troubled days of manpower shortages, many service organizations find it necessary to turn away many old and most new customers because their facilities are not adequate. Many service organizations have closed their doors during the war period, greatly increasing the load on the surviving service agencies.

Many firms are in a similar fix. They cannot get the goods or render the services the customers want. Yet every business man wants to keep the good will of his customers and hopes that he will again be favored by them in the postwar period. It is a problem to retain the customer's good will while refusing him the service he wants. Some contractors are doing a good job in this respect, while others are not.

It is an axiom of salesmanship that a salesman should try to enter into the customer's viewpoint, and be as helpful as possible. That is so obvious that we hesitate to mention it. However, if the customer must be told that the service cannot be rendered when desired, the least the service man can do is to weep with him.

It might be well to impress your organization with the importance of expressing a refusal sympathetically, and where possible helping the customer to find some suitable substitute.

Army Honors Cleveland Service Man

Normally the Army expects a man to perform his duty without praise. However, the *United States Army Dispatch* reports that Tech. Sgt. Ralph P. Babcock, a member of Refrigeration Maintenance Corp., Cleveland, prior to his enlistment, and now attached to the 69th Quartermaster Corps Refrigeration Company and

Edited by
Warren W. Farr

stationed in the Persian Gulf Command, has been commended for his fine performance in keeping the power plant, generators, air conditioning systems and refrigeration equipment in the Central Division in top operating condition.

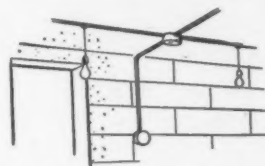
In addition to the above service, he has supervised the installation of refrigeration equipment in cold storage plants at Ahwaz and Khorramshahr, in Persia.

Low Temperature Cooler Wiring

Electrical conduits should be brought into the locker room through the wall in which the door is set, and the leads distributed within the room

on the underside of the ceiling insulation.

This method of wiring avoids the necessity of making several openings in the insulation which might impair insulating efficiency. It also eliminates breakage of light bulbs that occurs when electrical lines are dropped through the ceiling insulation, permitting warm air to enter and form ice on bulbs.



The method of wiring for best results is illustrated in the sketch above.

Improvised Repairs

Mention of the use of bending springs in this department's June columns elicits the following comments from Jesse R. Dunn, of Falls City, Neb. Says he:

"I want to tell you about a tube bending job that I ran into last week. There was a store in a nearby town that had a bad fire. The compressors were in the basement, and two of them got hot and melted the solder on the return bends of the air-cooled condensers and blew the bends off to nobody knows where.

"So it was up to me to make new ones, since I couldn't find any place where they stocked them. They were 3/8" tubing and 5/16" centers.

"After experimenting, I found I could bend them in the regular 3/8" roller bender, then melt lead and run it into them, and put them in a vise and draw the vise up on them until

HELP WANTED
WANTED: From refrigeration installation and maintenance contractors who are readers of **THE REFRIGERATION INDUSTRY**, ideas on how to do routine jobs more easily and quickly.

We want to pass these time and trouble-saving ideas on to others, so that they can benefit by them. Shop equipment, installation methods, servicing kinks . . . tough or simple, long or short, plain or fancy . . . that's what we want.

Send them to **HERE'S HOW**, c/o **THE REFRIGERATION INDUSTRY**, 812 Huron Rd., Cleveland 15, Ohio. We'll pay you \$5, or a copy of *Althouse & Turnquist's "Modern Electric & Gas Refrigeration,"* for each suggestion published.

THE SERVICE MAN'S DEPARTMENT

I had the right width, then heat them up and run the lead out.

"It all took time—but when you're in a spot where you can't get what you want, you have to make it."

Major Repairs Still Needed

It has been recently reported in New York City that many homeowners are deferring major repairs to their refrigerators in anticipation of purchasing a new refrigerator at an early date. It should be brought to their attention that new domestic refrigerators will not be available before early next year, and that even when they are produced, they will be added to the Government stockpile or released only for extreme hardship cases.

With these facts in mind, it is important that you stress to your customers that they have proper repairs made when service agencies can best perform these repairs.

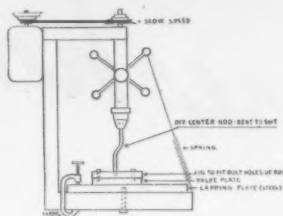
Lapping Valve Plates

A simple way to lap bad valve plates, useful in any refrigeration shop owning a drill press, is reported to us by Robert Recar of St. Louis, Mo.

Bolt a lapping plate to your drill

press base, clamp a piece of fine sandpaper to the lapping plate, and set the valve plate on the sandpaper.

Next, put jig on valve plate, being

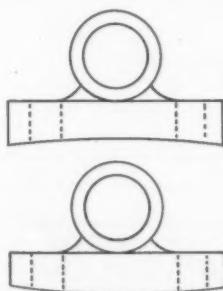


careful to line up with bolt holes in valve plate. Set an off-center rod, bent to suit the particular job, in a hole drilled half way through the center of the jig, and run the drill press at half-speed.

The arrangement is illustrated in the accompanying sketch.

When re-installing a flanged valve on its pad, it is often difficult to make the gasket hold, even though the old gasket has been completely removed.

The usual reason for this is that



the valve has acquired a permanent set; that it, it is warped.

The cure for this difficulty is to draw file the surface, or even to give it a rocker effect, the center projecting above a line drawn through the ends.

In the illustrations above, the top one shows an end view of a flanged valve with permanent set; lower drawing shows the valve after it has been given a rocker bottom.

Edward A. Wenk,
New York City.

Use Accurate Thermometers

One of the most frequently used tools on commercial refrigeration installations is the thermometer. It is good business to use an accurate thermometer. A cheap thermometer of the dime store variety has no place in the service man's tool kit.

Use reliable instruments always,

take good care of them, and check them frequently against master thermometers.

A good—and easy—check is to immerse the bulb of the thermometer in a can of finely crushed ice. Since the temperature of melting ice is 32° F., we can check our refrigeration thermometer at the melting point and be reasonably sure that it is accurate over the temperature range on which it will be used.

IN removing oil from a compressor body, I always carry a short piece of rubber tube, about a foot long, with one end of the tube slipped over a piece of 1/4" copper tubing about 8 or 9 inches long.

After pumping out the compressor body to approximately 1 lb. pressure, I remove the oil plug and insert the copper tube into the crankcase, and then remove it and wrap some tape around the tube to form a plug for the crankcase hole.

I then insert the copper tube into the crankcase and crack the suction valve. Momentarily, the pressure built up in the crankcase drives the oil through the tube and into a container, where it may be inspected for moisture or measured, as the case may be.

R. J. Whiteside, Waterbury, Conn.

Safety First

Mark plainly on all of your service drums their empty weight, so that by weighing them you can determine whether the drum is empty, whether it is overcharged, or what portion of the refrigerant has been used. It is particularly necessary during the hot summer months, to be able to determine readily that a drum is not overcharged.

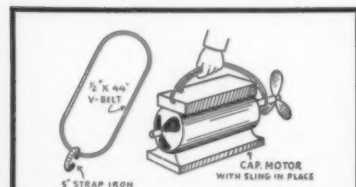
Service DO'S and DON'TS

DO:

1. Check for leaks if shortage of gas is indicated.
2. See that flywheel and fan pulley are tight.
3. Use a lowside gauge when adding refrigerant.

DON'T:

1. Sit in front of an air-cooled condenser. Dust and dirt may get in your eyes and colds can be contracted easily in this manner.
2. Work on a belt or fan without pulling the switch. The machine may start.
3. Work on electric circuit with the switch on. Disregarding this caution may prove fatal.

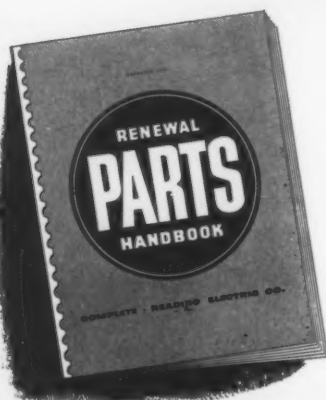
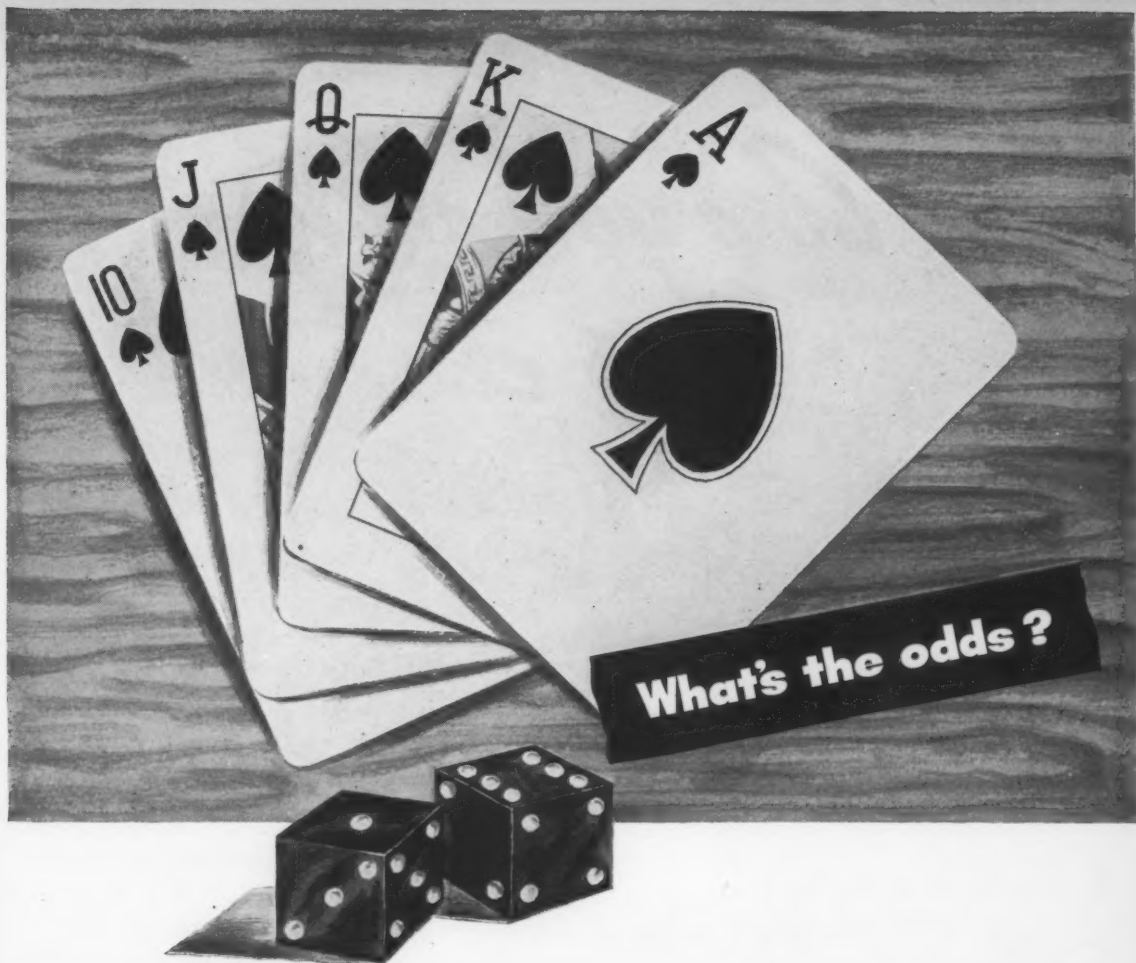


TO facilitate handling fractional-horsepower motors I made a sling so they could be easily carried in one hand with no danger of damaging the fan or shaft. This leaves the other hand free to carry my tool chest, and thus make one trip clean up the job.

In making the sling, I used an old 1/2" by 44" V-belt and a 5" piece of perforated strap iron. I bent an eye in one end of the iron, and placed it around the belt with a loose fit. On the other end, I bent a 1/2" hook. In use, the belt is placed around the pulley and the hook on the lip of the can box on a capacitor motor, or in the inspection hole on repulsion-induction motors.

This makes a solid handle and is easily released by merely setting the motor down and releasing the tension on the belt. Care should be taken to bend the hook only long enough for a secure hold. Otherwise, terminal posts or windings might be damaged.

Fred W. Crandell, Great Bend, Kan.



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Are you setup to clean

AIR

As air conditioning equipment comes into wider use, as it is bound to do when current restrictions are lifted, maintenance of this equipment will be desirable business for the refrigeration contractor. Here's how one organization keeps its customers' jobs in top operating condition

IN THE nation's industrial plants, hospitals, theaters and other places where people congregate, air conditioning systems are now being called upon to provide relief from summer heat. How well they are doing their cooling, dehumidifying and air cleaning job depends largely on their degree of cleanliness.

The efficiency of all of the component parts of an air conditioning system is affected by dirt deposits of one kind or another. The parts most seriously affected by dirt are filters, supply and return ducts, refrigerant

coil, heating coil, fan wheels, evaporative condensers and cooling towers.

It is not the intention of this article to spend a great deal of time dwelling on the bad results obtained from dirty equipment, but rather to show how one organization has equipped

itself to maintain air conditioning equipment in top operating shape. In passing, however, it is interesting to note a particular job, where the store owner contemplated the installation of additional equipment, because the existing system apparently was not adequate.

The original system consisted of a 20 H. P. cooling system, which operated quite satisfactorily upon installation. However, departments were moved and heat-generating items were installed, plus the fact that during the war years patronage was considerably heavier.

It was determined that an additional 7½ tons of refrigeration would be required to offset these changes and additions. However, before the new equipment was to be installed, it was recommended that the existing system be thoroughly cleaned. To the amazement of all concerned, after the cleaning job was completed the origi-



Special tools required for cleaning air conditioning systems.

CONDITIONING SYSTEMS?

nal installation performed so adequately that the installation of new equipment was deferred indefinitely.

In order to perform air conditioning maintenance work of this type satisfactorily, it is desirable to have a few special tools and an established operating procedure in cleaning the system, so that all necessary parts of the job will be covered adequately.

The operation should be scheduled on a check-chart, and this chart should be filled in, on the job, by the mechanic who is doing the work, with the back of the sheet used for any special notations in connection with needed repairs or alterations.

Tools found most necessary in performing this type of maintenance job include (1) an industrial type vacuum cleaner and attachments, (2) either a

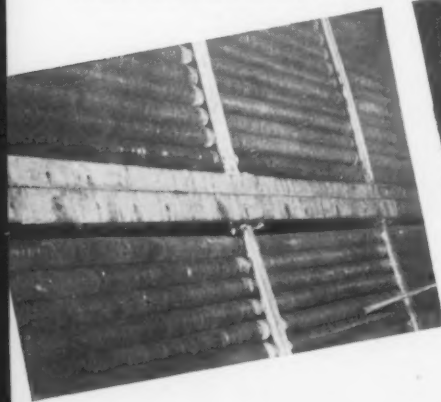
vents, and (6) an extension cord of sufficient length to reach well into the duct work of the cooling system.

It is well to start this cleaning job by removing the dirty filters and cleaning the refrigerant coil and drip pan drain first. The largest amount of dirt is usually found in this area of the system, and by removing it at the outset the maintenance contractor eliminates possibility of its being spread to other parts of the system.

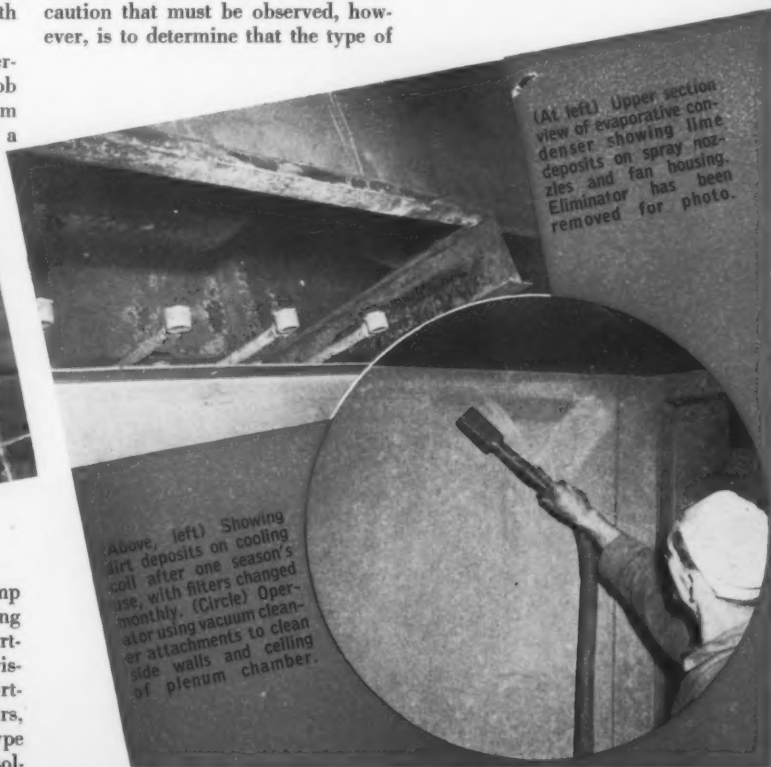
The cooling and heating coils usually are cleaned by pumping a strong alkaline solution over the coils. One caution that must be observed, however, is to determine that the type of

solvent used is suitable for use on the material of which the coils are constructed. Particular care must be taken with aluminum fins and tubing, as this material reacts rapidly to many of the commonly used solvents.

Second step is to clean the drip pan under the coil by either wiping it out with solvent, or, if the pan is rusty at all, by scraping it with a putty knife or wire brush. The balance of the plenum chamber can then be cleaned out by using the vacuum



five-gallon hand-type pressure pump or a small portable electric circulating pump of the gear type, (3) an assortment of brushes, including soft bristle and wire brushes, (4) an assortment of putty knives and scrapers, (5) several five-gallon sealed-type fuel cans for carrying cleaning sol-



(At left) Upper section view of evaporative condenser showing lime deposits on spray nozzles and fan housing. Eliminator has been removed for photo.

Above, left) Showing dirt deposits on cooling coil after one season's use, with filters changed monthly. (Circle) Operator using vacuum cleaner attachments to clean side walls and ceiling of plenum chamber.

cleaner and attachments to pick up dust and dirt.

Extreme care should be taken where joints are made, or where offsets in the duct work occur, as dirt usually accumulates in these "pockets" and may be overlooked in a hasty cleaning job. If both sides of the heating and cooling coils are not readily accessible, it is desirable to cut access doors in the plenum chamber and duct work to facilitate future cleaning.

After all loose dirt has been removed from the plenum chamber and the fan section, including fan housing, fan scroll, and all accessible duct work, clear water should be used to thoroughly wash down any traces of the solvent used in dislodging dirt and grease at the coil area. The plenum should be thoroughly dried, and the drip deck painted to prevent rusting. The exterior of all exposed duct work then should be cleaned, with either the vacuum cleaner or a soft brush, and in extreme cases, with a rag saturated with non-inflammable mineral spirits.

Cleaning Duct Work

It is then desirable to remove supply and return grilles and clean them thoroughly, together with all accessible duct work. Before assembling the grilles back on to the duct work, cheese cloth should be fastened over the opening and the fan operated to force all dislodged dust particles out of the system at this point.

The balance of the refrigeration equipment is now ready for cleaning. It is important that the condensing unit be left free of any dirt, and that all rusty parts receive a coat of rust-resisting paint. The final operation in cleaning the system consists of cleaning the water-cooled condenser and cooling tower or evaporative condenser, as the case may be.

Removing Condenser Scale

With the same pump assembly that is used in cleaning the refrigerant coil, the water-cooled condenser can be cleaned by circulating a suitable scale-removing compound until all action is complete which ascertains the fact that all lime deposits have been removed. The same treatment can be used in cleaning the cooling tower or evaporative condenser. However, the same precautions apply as with the cooling unit, in that materials should be used only after it has been determined that they are suitable for

Air Conditioning Cleaning Check-Chart

ADDRESS..... CITY..... DATE.....

DUCTS

Cleaned: Fresh air..... Return air..... Supply.....
Cut access panels..... Number..... Grilles cleaned.....
Grilles tight to wall to prevent air bypassing.....

COOLING UNIT

Cleaned interior of cooling unit..... Removed rust..... Painted.....
Cleaned fan wheels..... Fan housings..... Need replacing.....
Vacuumed coil..... Washed coil..... Condition of drain.....
Filters..... Filters cleaned..... Cover plates replaced.....
Condition of insulation..... Repaired insulation.....
Cleaned exterior of unit..... Ducts.....
Bearings lubricated..... Damper setting.....

EVAPORATIVE CONDENSER

Cleaned and scraped fan wheels.... Fan housings.... Eliminator plates....
Spray tree..... Water pan..... Interior of unit.....
Painted all parts where needed..... Cleaned ducts..... Grilles.....
Louvers..... Coil cleaned..... Coil descaled..... Screen.....
Condition of drain..... Pump cleaned.....
All access panels replaced and properly fastened.....

COOLING TOWERS

Cleaned pan..... Spray tree..... Painted..... Louvers cleaned.....
Need painting..... Condition of drain..... Drain screen.....

COMPRESSORS

Cleaned..... Rusted parts painted.....
REMARKS

WORK COMPLETED:

MECHANIC

CUSTOMER APPROVAL

use on the metals and materials from which this equipment is fabricated.

Here, also, the same procedure should be followed in thoroughly washing the equipment with clear water after the cleaning solution has been employed, to make certain that it has been removed.

Clean Filters Important

The system is now ready to be completely re-assembled. A new set of filters should always be installed after such a cleaning operation. Upon operating the system, after a cleaning job of this sort has been completed, additional capacity will be indicated by increased suction pressures, which indicates the fact that greater quantities of heat are being delivered to the compressor.

As a preventative against scale in cooling towers and evaporative condensers, it is generally desirable to add water treatment to this re-circulated water, to prevent the formation of scale.

As air conditioning equipment be-

comes older, and as this equipment comes into wider use, as it is bound to do when current restrictions are lifted, maintenance of air conditioning systems will be desirable business for the refrigeration contractor.

Jobbers Stock Solvents

Solvents and scale-removing compounds can now be secured from most refrigeration supply jobbers. This is a comparative new item in the jobber's inventory, indicating that the largescale demand for this type of work is somewhat of a new field. In your post-war planning and when the manpower situation has eased, a considerable volume of profitable work can be developed in this field during the off-season months.

As the need for this work becomes more apparent, new systems doubtless will be designed and installed with a sufficient number of access doors and inspection plates to make the cleaning of the average air conditioning system much simpler than most plants of earlier design now in use.

Superior Deluxe* DEHYDRATORS



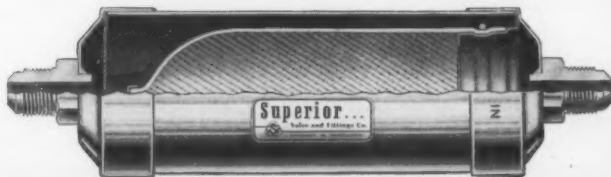
... readily refillable ... on the job, or in the shop. When the gasket-type, inlet-end Strainer Union is removed, you get a generous unrestricted dehydrant removing and filling opening.

High quality filter pad ... fortified by supported screens at outlet-end removes even the finest particles of foreign matter from the refrigerant stream.

End fittings are silver-soldered to end caps ... end caps are soft-soldered to main body ... removable for inspection and replacement of filter pad and screens.

Superior FILTERS

Equipped with highly efficient sack-type filter, plus fine screen at outlet-end. End fittings are silver-soldered to end caps ... end caps are soft-soldered to shell ... removable for replacement or cleaning filter sack.



If you haven't a copy of Catalog R2, request one today.

NO. 99

SUPERIOR VALVE & FITTINGS COMPANY
PITTSBURGH 26, PENNSYLVANIA

OFFICES IN PRINCIPAL CITIES • STOCKS CHICAGO (6) • LOS ANGELES (15) • JOBBERS EVERYWHERE



Sterling Smith, manager of the refrigeration division of Mills Industries, Inc., has announced two personnel appointments.



Harrison H. Hedrick, his former assistant, has been promoted to manager of distributor sales. In another move to strengthen Mills position in the refrigeration field, Mr. Smith has appointed **Matt Hogan** to assist Mr. Hedrick. Mr. Hogan was formerly manager of commercial sales division, metropolitan Chicago area, for Westinghouse Electric Co.

Maxson Food Systems, a division of the W. L. Maxson Corp., has announced the appointment of **Dr. M. E. Pennington** as consultant on the preservation of perishable foods. Dr. Pennington, a well-known authority in the field of perishable foods, was at one time with the U. S. Department of Agriculture as Chief of the Food Research Laboratory of the Bureau of Chemistry. During the war emergency, she has been consultant and advisor to the Research and Development Branch, Military Planning Division, Office of the Quartermaster General, and to the Food Control Division of the War Shipping Administration.

J. J. Anderson has been appointed assistant manager of the service department of Westinghouse's electric appliance division, it has been announced by L. K. Baxter, department manager.

Since November of last year, Mr. Anderson has been in New York as supervisor of the refrigeration specialties department, covering all of New England, New Jersey and New York state. For two years prior to that appointment, he had been an ordnance specialist for the company. His early work with Westinghouse

included sale and supervision of commercial refrigeration installations in the central district.

Gates Ferguson has been named advertising manager of Celotex Corp. Formerly he was associated director of the Federal Housing Administration in the New York district. Before that he was head of the advertising department of the B. F. Goodrich Co.

H. S. Manuel has recently joined the export division of Worthington Pump and Machinery Corp. Formerly he was with the research engineering department of Curtis-Wright Corp. After the war, Mr. Manuel, a native of Cebu City, Philippine Islands, will join the Worthington branch office in Manila.

The sight of a Norge refrigerator in a Tunis, Africa, shop "gave me one of my biggest thrills in two years with Montgomery's 'Desert Rats,'" according to **Capt. Ray C. Roy**, first World War II veteran to return to the sales staff of the Norge division of Borg-Warner Corp.



M. G. O'Harra, vice-president and general sales manager of Norge has appointed him Middlewestern regional sales manager, with headquarters in Detroit. He will cover Illinois, Wisconsin, Indiana and parts of North and South Dakota and Iowa.

In seeing the refrigerator in Tunis, Capt. Roy suffered a disappointment as well as a thrill. "I wanted my picture taken with it but didn't have any film for my camera and couldn't find anyone else with a camera," he explained. The refrigerator, which had been hidden during the German occupation, had just been put on display and was priced at almost \$600. "Its prewar price in the United States was about \$175," Roy said.

John A. Craig, chief engineer of Crosley Corp., has recently been named works manager of the company's Richmond, Ind., plant, site of Crosley refrigerator and home freezer production.

Howard L. Clary has resigned as chief of the Office Supplies and Personal Goods Section of WPB to become associated with Norge Division of Borg-Warner Corp. Before he went to WPB, in June, 1942, he had been with Ludwig Hommel & Co., Pittsburgh Norge distributor.

Ross D. Siragusa, president of Admiral Corp., Chicago, has announced the appointment of **Max J. Schinke** as service manager for all Admiral products.



Mr. Schinke formerly held this position with Stewart-Warner Corp. Admiral acquired the Stewart-Warner appliance division in February, 1944.

Mr. Schinke is chairman of the service committee of the Radio Manufacturers Association.

Hal Buemer, for many years associated with the refrigeration phase of the ice cream industry, has been named sales manager of the Philadelphia branch of Engineering & Refrigeration, Inc., reports W. H. Knowles, president of the Newark, N. J. firm.

Mr. Buemer has been associated with the industry for more than two decades, having been with C. Nelson Mfg. Co., St. Louis, for 12 years, and prior to that with Universal Cooler Corp. For the past two years, he has been with WPB in Washington.

Mr. Buemer also will be associated with Mr. Knowles in representing Grand Rapids Cabinet Co., in the eastern territory.

Mark M. Woolwerth has been appointed to the advertising and sales promotion department of Viking Air Conditioning Corp., Cleveland. He formerly was with the Associated Press in New York.

T. Philip Begy, who recently resigned as factory representative of

General Electric in the Buffalo area, has formed his own firm, Mutual Appliance Distributors, to distribute a complete appliance line.

Art Reed has been appointed to represent the Clark Bridgman Co., Chicago, in the Michigan, Ohio and Indiana territory. His headquarters will be in Detroit.

Mr. Reed has been in the commercial refrigeration field since 1925, when he started with Frigidaire. In 1936 he went with General Heating & Appliance Co., Boston, as district sales manager, and in 1939 joined Cherry-Burrell Corp., dairy equipment manufacturer.

D. A. Newton has joined the F. J. Evans Engineering Co., Birmingham, Ala., as air conditioning engineer. His headquarters will be in Atlanta, where the company has a branch office. Mr. Newton has been with Carrier Corp., U. S. Rubber Co., and Larkin Coils, Inc., having been chief engineer of the latter company.

A. L. Scaife, merchandising manager of the appliance and merchandise department of General Electric Co., has been appointed advertising and sales promotion manager of that division. He succeeds Boyd W. Bullock, resigned.

Assistant manager of the division will be George W. Park, and E. F. Vickery will be operating manager of the appliance and merchandise department, supervising cooperative advertising expenditures and policies.

GOVERNMENT EXTENDS SUNROC CONTRACTS

Sunroc Refrigeration announces the extension of its Treasury procurement schedule contracts 42389 and 47024 to cover the requirements of government agencies for electric water coolers.

In October of this year, while the present extension is in effect, Sunroc will complete nine consecutive years of exclusive listing for this particular type of equipment on the government's general schedule of supplies.

NEW MILLS AGENCY

Wesley Aves and Associates, 402 Federal Square Bldg., Grand Rapids, Mich., has been appointed to handle advertising for Mills Industries, Inc.

PALMGREN

ANGLE VISES for REFRIGERATION REPAIRS

Refrigeration Repair Shops and Jobbers are finding these two products indispensable in service, profits, success. Difficult angle jobs solved. Quick, accurate set-ups for hand or machine Drilling, Grinding, Filing, Fitting and 101 other important shop operations. PALMGREN ANGLE VISES are made with 1½", 2½", 4", 6" and 8" Jaws. Accurately machined and graduated. Hardened steel jaws, plain or grooved.

No. 000
on
SWIVEL
BASE



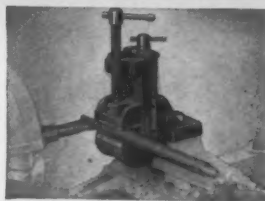
Milling Fixture Vise For Lathe

Save time, do milling jobs on lathe. Increase volume. Fits 8"-9"-10" South Bend, Atlas, Craftsman, Sheldon, etc. Graduated vertical feed screw and 360° graduation for vertical angle adjustments. Mounts on cross slide and held by T-Slot bolt. Vise has 2½" jaws, 1-7/16" deep, grooved and plain. Price \$24.75.

Write for Circular No. 348 and Jobber Help

CHICAGO TOOL AND ENGINEERING CO.

Mfrs. of PALMGREN PRODUCTS for over 25 years.
8410 South Chicago Ave. Chicago 17, Ill.



Service Engineers Should Know...

"VIRGINIA" METHYL CHLORIDE IS REALLY LABORATORY TESTED

— the content of each and every container —
large or small — is analyzed 3 separate times.



BOILING POINT TEST

1. A measured sample from each cylinder must be water-white in color and when boiled to dryness must record within 25/100 of 1 degree a constant boiling point of minus 23.8°C. This test detects unwanted hydrocarbons, dirt and oil impurities.



ACIDITY TEST

2. The acid content in a sample of known weight must not exceed 6 parts per million; low acidity prevents copper plating and oil sludging.



MOISTURE TEST

3. The moisture in a sample of known weight must not exceed 80 parts per million; — low moisture prevents freezing at expansion valve and refrigerant break-down.



The name "V-METH-L" on the cylinder is your guarantee of quality. Sold by refrigeration supply jobbers everywhere.



VIRGINIA Smelting Co.

WEST NORFOLK, VA.

76 BEAVER ST., NEW YORK 5 131 STATE ST., BOSTON 4
Agents for Kinetic's "Freon-12" — "Freon-22" — "Freon-11"

PAY DIRT . . .

Continued from page 23

tion" basis of this type, the company has found. The customer is spared the problems involved in dealing with several sub-contractors, for one. For another, over-all supervision enables the whole installation to be handled on a uniform basis, and in general results in a more satisfactory all-round job. Of course, under such a system, the responsibility is concentrated on one firm—but, then, so is the praise when the job's well done.

Versatility of the Apfel organization is indicated by the fact that some recent jobs have ranged as follows: locker storage plants, dairy plants, hospital, hotel and other institutional installations, low temperature food processing, grape juice cooling, tomato juice cooling, fish freezing and processing, and commercial and industrial air conditioning.

Let's take a look at three typical moderate-size commercial installations which the company made recently:

One is in the Circle Fisheries Co.,

Erie, and comprises a low-temperature room for holding frozen sea food. The Circle company, of which Louis Courtney is president, has found that having ample storage space enables it to merchandise a much larger amount of salt-water fish in the Erie territory.

The low-temperature room, 16' x 16' x 10' high, completely constructed and equipped by the Apfel company, is insulated with 6 inches of cork all around, and is served by a York 3 x 3 ammonia compressor. Temperatures of from 0° to 10° F. are maintained in the storage room.

A Kramer "Freezing Shower" blower unit distributes air in the refrigerated space. Large shipments of sea food can be stored in the facilities provided, and held indefinitely. Formerly it was necessary to match each shipment with anticipated demands, always a tough problem.

Another recent Apfel installation—two installations, in fact—was in the Hotel Conneaut, at Conneaut Lake Park, Pa. This is a resort hotel, open only about three months during the year, and located off the principal

Continued on page 40

We can deliver MOTOR-STARTING CAPACITORS

Exact duplicate motor-starting capacitors? Sure — Sprague offers the finest, most complete line — BUT: Why not follow the lead of prominent motor manufacturers and standardize on the small Sprague 3500 Series UNIVERSAL Types? They meet ANY requirement up to their rated capacities. They fit anywhere. They're more dependable than the big, old-style units they replace. They're available for PROMPT SHIPMENT in capacities from 24 mfd. to 350 mfd., 110 Volts A. C.!



**WRITE FOR THIS BOOKLET
Today!**

Ask for
C-352



**They're
Universal!**

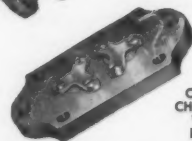
SPRAGUE PRODUCTS COMPANY
North Adams, Mass.

Jobber Sales Organization for
SPRAGUE ELECTRIC CO., North Adams, Mass.

Why the Trend Is Strong to CHICAGO SEALS and VALVE PLATES



CHICAGO
GENERAL
REPLACEMENT
SEAL



ONE OF
CHICAGO'S
VALVE
PLATES

Chicago Seals and Valve Plates make a better servicing job on all refrigerators, in less time, at less cost, at more profit . . . and more service men and more jobbers are finding out this fact every day.

CHICAGO SEAL CO.

20 North Wacker Drive, Chicago 6, Ill.



What
CONTROLS
Shall We
Use?

**The RIGHT Control for EACH
Application gives BEST Results!**

Milk, Beverage, Water Coolers *L480B Temperature Control*

Reach-In Meat Cases *Polartron System of Automatic Defrosting
W90 Temperature Control plus
P420B Pressure Control*

Soda Fountains } *P420B Pressure Control or
Ice Cream Cabinets } L480B Temperature Control*

Walk-In Meat Boxes *TA420 Frigistat plus W55A Relay
plus P421B Pressure Control*

Locker Storage Units *T414A Temperature Control plus
L413A or P421B Pressure Control*

Vegetable Cases *W90A Temperature Control
plus P420B Pressure Control*

Home Freezers } *L480B Temperature Control*
Low Temperature Cabinets }

Other M-H Controls are readily available for all types of applications. Minneapolis-Honeywell Regulator Company, 2909 Fourth Avenue South, Minneapolis 8, Minnesota. Branches and distributing offices in all principal cities.

MINNEAPOLIS
honeywell

CONTROL SYSTEMS

The POLARTRON SYSTEM of FROST FREE REFRIGERATION

PAY DIRT . . .

Continued from page 38

railroad lines, so that the problem of getting foodstuffs in for special occasions was difficult under existing conditions.

The hotel, which caters to large meetings, sometimes has been called on to serve 2000 guests at a time. Of course, conventions of this size are no problem under present ODT regulations, but in times to come they will be.

The installation includes two normal-temperature storage rooms, one each for meats and vegetables, each 12' x 12' in size, and served by a 1½ H.P. Freon condensing unit; and a low temperature room, 11½' x 9' x 7½' high, insulated with 6 inches of cork, and served by a second 1½ H.P. Freon unit. Air distribution in the low temperature area is by means of an American Coils "Zero-Breeze" unit, with electric defrost. The zero room was installed to enable the hotel to make wider use of frozen foods in its commissary.

One of several freezer and storage combination systems installed by the company was in Bradford Hospital, Bradford, Pa. R. S. Hosford, superintendent, was responsible for "selling" the job to the hospital's directors.

Assures Food Supply

The hospital, a 200-bed unit, was unable to obtain the proper sort of food, and the superintendent wanted to have assurance that an ample supply would be at hand when needed. Refrigerated storage space, he was convinced, would enable the hospital to buy better quality produce in larger quantities on the open market. The hospital processes its own food and meats, and refrigeration has provided an improvement in both taste and eye-appeal over any previous method used.

Anteroom of the freezer, 10' x 6', is held at 35° F. by means of pipe coils; low temperature room, 18' x 10', is maintained at -10° F., using Krack "Freez-E-Fex" blower unit with electric defrost. The entire refrigerated area is insulated with 6 inches of vegetable cork, laid up in hot asphalt.



PERFECTLY FORMED

LIGHT WEIGHT

DENSE STRUCTURE

NIBCO

WROT

Fittings for Refrigeration



NIBCO WROT Fittings are formed in one step from straight copper tubing. They are strong, light in weight and dense in structure . . . impervious to gases. Because every fitting is perfectly formed and absolutely "round and square," they are easier to use in production. Laboratory Control and individual plug testing assure close tolerances. You can eliminate service troubles by using vibration-proof and corrosion-proof NIBCO WROT Fittings. Write for complete catalog.



NORTHERN INDIANA BRASS CO.

ELKHART, INDIANA

VALVES AND FITTINGS SINCE 1904



Are you fighting
**HIDDEN
REFRIGERANT
LEAKAGE?**

Spot it immediately with
VISOLEAK

Detects even the smallest leaks before they cause serious damage to expensive installations and loss of costly products. Years of use have proven VISOLEAK to be dependable, economical, safe and easy to use. See your refrigeration supply jobber or write for complete information.

WESTERN THERMAL EQUIPMENT CO.
5141 Angeles Vista Los Angeles 43 Calif.



FIRST TO AID—Through utilization of this unique "permanent" crate, Norge refrigerators containing vital blood plasma, serums and other first aid supplies requiring refrigeration, are being used within yards of the actual fighting fronts. Front panel of the crate is quickly removable or replaceable, with the result the refrigerator can be transported rapidly from place to place without damage from handling. Portable generating units provide power. Several hundred prewar Norge refrigerators, "frozen" in stockpiles after Pearl Harbor, are thus being sent to battalion aid stations in the Southwest Pacific.

"CLEAN-A-COIL"

FOR
DE-SCALING
CLEANING

**WATER COOLED
CONDENSERS,
COOLING COILS,
EVAPORATORS.**

**NOT CLASSIFIED AS
CORROSIVE LIQUID**

*Write for Descriptive Literature
or Consult Your Local
Jobber*

Standard Solvent Co.

4740 WOODLAWN AVE.

CHICAGO 15

NINE DISTRIBUTORS ADDED BY BEN-HUR

Ben-Hur Mfg. Co., manufacturer of home and farm freezers, has announced appointment of nine new distributors. They are:

RCA Victor Distributing Corp., Chicago; RCA Distributing Corp., Kansas City, Mo.; Peden Iron & Steel Co., Houston, Tex.; John Pritzlaff Hardware Co., Milwaukee; Toledo Merchandise Co., Toledo, Ohio; Suttle Equipment Co., Lawrenceville, Ill.; Crest Corp., St. Louis; Stauffer, Eshleman & Co., New Orleans, La.,

and Peerless Electric Supply Co., Indianapolis.

TWO NEW OUTLETS NAMED BY HARDER

Harder Refrigeration Corp. has recently appointed two new distributors for its complete line of "Harder-freeze" home and farm freezers:

Albany Hardware & Iron Co., Albany, N. Y., whose territory includes eastern New York state, and Cloud Brothers, South Bend, Ind., who will cover northern Indiana and southern Michigan.



Of course the first and foremost requirement of a pressure gauge is accuracy. But almost any gauge starts off accurate. The real measure of gauge quality is found in ability to stand up and stay accurate.

Marsh Gauges do. The Marsh reputation for making instruments of lasting accuracy is traditional. You would need no better reason for insisting on Marsh Gauges for every application. But you have still another reason—the Marsh "Recalibrator".

If some abnormal condition knocks a Marsh Gauge out of adjustment a twist of the "Recalibrator" screw will restore its accuracy at all points on the dial—a feat that cannot be accomplished with certainty by the conventional zero adjustment.

You get lasting accuracy when you select the Marsh Gauge . . . and on top of that the "Recalibrator".

JAS. P. MARSH CORP., 2060 Southport Avenue, Chicago 14, Illinois
Export Department: 155 East 44th St., New York 17, N. Y.

MARSH
Refrigeration Instruments

CONTRACTORS

New Contractors Group Organized in California

Refrigeration contractors from the San Francisco and Oakland East Bay region have organized the Refrigeration Contractors Association of Northern California at a meeting in San Francisco recently.

Officers elected were: C. H. Merrill, president; A. K. Turner, vice president; W. A. Scott, treasurer; and L. E. Kreps, secretary.

Members of the association, all of whom will serve as directors of the organization, are: Charles H. Merrill, J. Chapman, Lee Shirar, A. K. Turner, Nat Silverstone, Ed Krantz, L. E. Kreps, and W. A. Scott.

MOTOR REPAIR RATINGS

Repair men using the ratings assigned by CMP-9A or Order P-126 may use the ratings to get motors repaired, rewound or rebuilt if they are used in such products as refrigerators, washers, oil burners, stokers or in commercial refrigeration systems, despite the provisions of Priorities Regulation 3, WPB has ruled in Directive 5 to CMP-9A.

This means, in effect, that repairmen can apply a rating that will push such motor repairs ahead of unrated and AA-5 rated orders. The Electrical and Mechanical Repair Trades section of OCR was instrumental in getting the order put through.

Plans on Products Outlined by McQuay

Postwar plans as revealed by McQuay, Inc. include the manufacture of the same type of heat transfer units, unit coolers and air conditioning coils produced before the war. A large export market is anticipated by the company on small heat transfer units operating at 9750 B.T.U. per hour.

Also in the McQuay postwar line will be ice makers, refrigeration coils, and cooling coils for reach-in units, as well as the "Icy-flo" accumulator unit which the company introduced just before the war for use in applications requiring irregular but peak-load air conditioning.

The company could be in full production under six months after WPB limitations are removed, it was said.

INFORMATION, PLEASE

V. A. Turner, of the engineering department of H. J. Heinz Co., Pittsburgh, sends in a request for information on a somewhat controversial problem that we're sure our contractor-readers will be more than glad to help him settle.

Here's Mr. Turner's problem:

"There seems to be considerable difference of opinion in the industry of this area relative to the advisability of using welded steel pipe in an air conditioning plant using Freon as the refrigerant for cooling.

"We have two 150-ton air conditioning plants in which steel pipe was used both on the high and low pressure sides, since copper was not available at the time the installations were made.

"I have had an equal number of engineers tell me that we should replace the steel piping with copper as soon as it is available, and others say they recommend steel pipe on any installation over 25 tons.

"Will you please pass this along to your subscribers, and let them kick it around a bit and see what kind of an answer they can come up with?

"Personally, I can see no reason why we should experience any trouble as long as we keep moisture out of the system, but what will happen if some moisture gets into the system? What percentage of moisture will cause trouble? Should we keep a dryer in the system at all times?"

All right, men—kick it around . . . and send your answers to CONTRACTORS, c/o The Refrigeration Industry, Cleveland 15, Ohio. Let's get Mr. Turner off the anxious seat, one way or the other. Hurry, now!

Miami Contractor Moves to Larger Quarters

Southland Refrigeration & Maintenance Co., Inc., Miami, Fla., has been reorganized and expanded to step up present service facilities, and negotiations have been completed to move into a newly acquired building of larger size.

First floor of the new location will be given over to offices and show rooms, while the second and third floors will house service shops. Future plans include expansion in the industrial and commercial fields, as well as marine refrigeration, says J. E. Griffin, president.

Fedders to Return With Unit Coolers

DEFINITE PLANS to return to the refrigeration field are being made by Fedders Mfg. Co., Inc., reports C. E. Scott, sales manager for air conditioning and heating. During the war period, the company dropped its refrigeration line, except for water coolers.

Plans already have been drawn up to resume manufacture of forced draft unit coolers, Mr. Scott said, and at least one model will be on the market before the end of the year. Valve production, he said, probably will not be resumed.



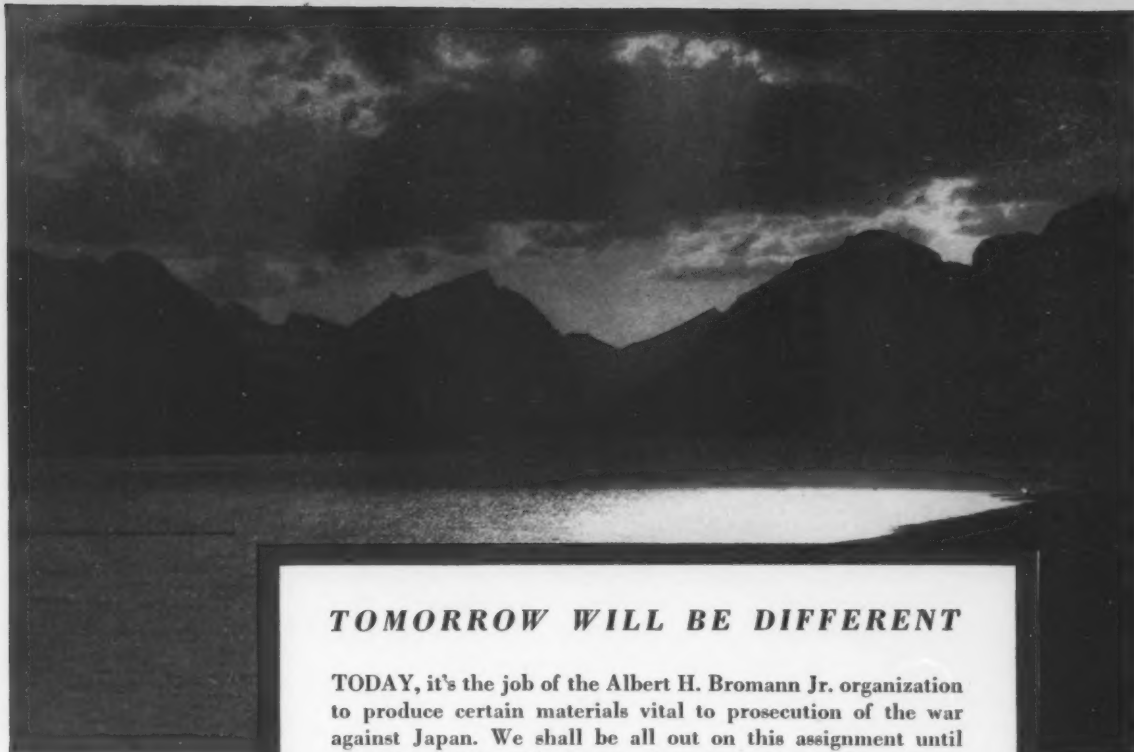
Jane Wyatt, RKO star, may not be pointing a moral, but she certainly adorns a tale of the Westinghouse Precipitron as she points out the dirt whiskers accumulated on the plates of the electrostatic air cleaner at the Stage Door Canteen to Lieut. Preston R. Lynn, Wilmington, Del., and Capt. Harry A. Wakefield, Palm Beach, Fla. The Precipitron cleans 90 per cent of the dust, dirt and smoke out of the air of the Canteen.

Opens Fresno Store

Weir Refrigeration Service Co., of Vallejo, Calif., has opened a new sales and service unit in Fresno, Calif. W. G. Abbott is manager. The new shop is displaying several types of walk-in, reach-in, and several back-bar refrigeration units. Advance orders for home freezers are now being sought from ranchers and fruit growers in the Fresno area.

Two New Cooling Firms Formed in Buffalo

Two new air conditioning firms have been organized in Buffalo recently: Automatic Heating & Appliance, 823 Niagara St., Joseph Mondo, president; and Daverne Heating & Air Conditioning Co., 389 Hewitt Ave., Ray M. Daverne, president.



TOMORROW WILL BE DIFFERENT

TODAY, it's the job of the Albert H. Bromann Jr. organization to produce certain materials vital to prosecution of the war against Japan. We shall be all out on this assignment until the Nips holler "Uncle" in their least face-saving manner.

Then will come Tomorrow.

TOMORROW, for the Albert H. Bromann Jr. organization, means quick reconversion to production of the following equipment:

Custom Built Products

- Complete Cooling Rooms
- Cabinets for Industrial and Commercial Freezers

Standard Products

- Cold Storage Doors
- Direct Drawn Beer Dispensers

As soon as materials are released, this experienced organization will begin fabrication of the quality equipment your customers want.

No Albert H. Bromann Jr. product will be sold direct to users. All our equipment will be sold only through recognized, established refrigeration dealers.

If you are interested in handling one of the outstanding lines in the post war refrigeration field, on a basis that assures substantial and protected profits, we cordially invite you to get in touch with us.



ALBERT H. BROMANN JR.

GENERAL OFFICES: 4822 WEST CHICAGO AVENUE • CHICAGO 51, ILLINOIS



**say leading
air conditioning and
refrigerating equipment
manufacturers**

It's good business for you to handle *Texaco Capella Oils*. They are quick money makers because they meet the lubrication requirements set by leading air conditioning and refrigerating equipment manufacturers.

That means *Texaco Capella Oils* do a really efficient lubrication job — assuring you of customer satisfaction, repeat business, increased sales, bigger profits.

Texaco Capella Oils come in six different viscosities, all with exceptionally low pour points. They are dehydrated, highly stable, and do not react with refrigerants. They are strongly resistant to gumming and sludging.

Careful selection of crudes and superior refining methods make *Texaco Capella Oils*

truly outstanding. Available in Texaco's attractive, re-sealable containers—1-quart, 1-gallon, and 5-gallon cans.

And be sure to get your free copy of the handy *Texaco Lubrication Guide*, which lists make and type of compressor and refrigerant used in each of 55 makes of electric refrigeration units and 32 air conditioning units, and shows at a glance which oil to use for each.

Send for your copy of this valuable service aid today. And order *Capella Oil* for prompt delivery. Get in touch with the nearest of more than 2300 Texaco distributing plants in the 48 States, or write:

★ ★ ★

The Texas Company, 135 East 42nd Street, New York 17, N. Y.



TEXACO Capella Oils

FOR ALL AIR CONDITIONING AND REFRIGERATION EQUIPMENT



TUNE IN THE TEXACO STAR THEATRE WITH JAMES MELTON EVERY SUNDAY NIGHT—CBS

COOLING VITAL TO AMMUNITION MAKER

Every day tons of cellulose, either as cotton linters or wood pulp, are unloaded onto the receiving platforms of Hercules Powder Co.-operated Radford Ordnance Works, one of the nation's most important smokeless powder plants.

The complex and delicate processes by which the cellulose is made, first, into nitrocellulose, and then into smokeless powder, must be rigidly protected from temperature and humidity fluctuations, so the weight and explosive power of each shell or cartridge load is exactly the same as every other load of its type.

Special air conditioning equipment plays an important part in the manufacture and testing of critical ammunition such as mortar powder.

Control of the temperature and humidity in the weigh house makes accurate weighing possible. It prevents the powder from becoming heavier or lighter due to moisture variation in the air, and also prevents the metal in the delicate scales from contracting and expanding as a result of temperature variations. Temperature and humidity conditions in the loading room also are rigidly controlled so the weather variable in the powder room remains constant, permitting accurate performance comparisons.

Another important application of air conditioning is the protection of stored powder. Constant temperature and humidity levels are maintained in the ballistic test magazines to keep powder in perfect condition until it is used.

G-E HONORS EX-PRESIDENT

To assist in higher education and fundamental research work in scientific and industrial fields, a fund of \$400,000 has been set aside by directors of General Electric Co. to be known as the Gerard Swope Foundation.

DISTRIBUTORS MEET

A reunion of Philco distributors was held recently in Manila, P. I., when Major N. B. (Chief) Williams, Philco distributor in Peoria, Ill., now a member of the United States Army Air Forces, met Sam Gaches, president and general manager of the H. E. Heacock Co., which handled Philco in the Philippine Islands, and his assistant Donal Gunn.

THE PRACTICAL Refrigeration Engineering MANUAL . . . by Harold Smith

IX. Ice Cream Processing

THE manufacture, sale and consumption of ice cream, frozen novelty products and ices has become a large and important industry. Because of the ingredients used, this business is frequently associated with the processing of milk and other dairy products. In all cities of any size, major ice cream manufacturers are to be found, some of them being very large business organizations.

In the larger plants, the refrigeration used for making ice cream serves many other purposes, such as the manufacture of ice, processing and cooling of milk and other dairy products. In such cases large ammonia systems are most generally used.

The manufacturing of ice cream in small plants and in some instances in individual retail stores is done with equipment using small machines and low pressure refrigerants, usually Freon or methyl chloride.

STORAGE SPACE NEEDED

For the purpose of manufacturing ice cream, storage facilities are required in which the ingredients used in making the ice cream must be refrigerated at fresh food temperatures prior to being processed into the ice cream products. Usually a walk-in storage cooler, carried at a temperature of from 30 to 40° F., is used for this purpose. However, in the smaller retail type manufacturer, an ice cream cabinet serves this purpose.

In the storage cooler, the refrigeration requirements are similar to those for refrigeration of any fresh food products, carrying a temperature slightly above freezing, and as in the case of storage of milk, the mix for ice cream is kept in cans, making it usually desirable to furnish a low

side consisting of a forced draft convection unit.

The fan blows the air around the cans and provides high efficiency and fast cooling, and no particular humidity problem is involved. However, a well balanced humidity condition can be obtained by selecting a low side unit of sufficient size and capacity to handle the refrigeration load with a temperature difference of between 10 and 15° F.

To estimate the refrigeration requirements for this cooler, the same procedure should be followed as was outlined in previous chapters, the refrigeration load being heat leak through the insulation, plus service load and products load, which as a rule, is not heavy. As the mix usually is placed in the cooler at a temperature close to 40° F., and as the temperature of the mix when ready to be frozen should not exceed 40° F., provision should be made to carry the storage cooler around 34 to 36° F.

The ingredients in the ice cream mix run from 8 to 18% fat, 6 to 12% milk solids, 13 to 14% sugar, about ½ of 1% gelatin and 60 to 70% water. The ice cream mix starts to freeze at from 27 to 28° F. in the freezer.

METHODS OF FREEZING

The freezing of ice cream is done in a freezer usually of the batch type and handling from 5 to 10 gallons at a time. Some of the larger freezers will handle up to 25 or 50 gallons at a freezing, but 5 and 10-gallon sizes are usually found in the smaller installations. The freezer consists of a cylinder surrounded by a refrigerated jacket, with paddles inside the cylinder to mix the ingredients while freezing and to whip air into the mix, which provides the overrun.

MOBILE COOLING DUE FOR POSTWAR GAINS

Strides in mobile and warehouse refrigeration, as disclosed by the Chicago depot of the Army Quartermaster Corps, augur a profitable new era in transportation of perishables, the motor freight industry has been assured by the Refrigeration Equipment Manufacturers Association.

Refrigerated trucking and warehousing are still in the embryo stage. Loosening of war production con-

trols of critical materials together with exploitation of advancements made out of the experience of moving perishable foodstuffs to Allied armies all over the world will be translated into a great volume of new cargo business.

Trucking firms exploring the future in regard to greater use of feeder lines and l.c.l. refrigerated shipping may take their cue from the army's mobile "reefer" which played a big role in the European war and

now is performing extraordinary feats in the "tough going" in the South Pacific.

These "reefers" are 10-ton trailers, pulled by tractors of from 4 to 5 tons to a point behind the combat area, called the communication zone. Collapsible units of 600, 1,800 or 4,300 cu. ft. are loaded in these trailers. These units can be removed and dispatched in the direction desired.

The trailer "reefers" cooled by an air-cooled gasoline motor-driven compressor, are operated and manned by the Quartermaster Refrigeration Company Mobile. In the European fighting just ended, one of these mobile companies with a fleet of 30 tractor and trailer units proved it could transport sufficient meat to nine divisions, the normal composition of an entire army.

The "tough going" for heavy transport in the Pacific brought on new complexities, but the problems were solved by development of a portable "reefer" that can be carried to advanced areas on Army 2½ ton trucks. It is also gasoline-motored. Constructed of steel, it is sturdy enough to withstand a fall of four feet, will maintain a temperature of 10° F. when the outside temperature is 120°.

In the refrigerated jacket, refrigeration is furnished by two methods, either through the use of cold brine circulated in the jacket around the cylinder, or by direct expansion refrigeration. Ice cream freezer manufacturers make both types of equipment.

The direct expansion type requires less auxiliary equipment, but the refrigeration requirements are considerably greater than in cases where brine is used. With brine freezers it is, of course, necessary to have a brine tank with pipe lines running to and from the freezer and a pump to circulate the brine, which is extra equipment that represents increases in cost of equipment and in installation, but which permits use of a condensing unit of much smaller horsepower than with direct expansion.

THE FREEZING PROCESS

The ice cream mix is placed in the freezer and the refrigeration is started. At the same time the paddles start to work. The freezing or congealing of the mix starts when the temperature gets down to about 38°, and the temperature is usually lowered very rapidly down to 28° F., which is the point at which the water in the mix starts to freeze. From then on, the temperature drop is slower.

After the temperature is dropped to about 24° F., the refrigeration is shut off and the paddles continue to whip air into the mix until the proper overrun is reached. It is important that the temperature is down in the neighborhood of 20 to 22° at the time the machine is shut off and overrun is reached, since unless

the ice crystals are sufficiently formed, the air will break from the mix making the ice cream flat and undesirable. As soon as the batch of cream is made, the mixer is opened and the cream is poured into the containers, usually 5-gallon cans. These cans should always be cooled to a temperature slightly below the temperature of the mix, if possible, thus eliminating any surface melting when the ice cream is poured.

HARDENING ROOM

After the cream is placed in the cans it is immediately moved into the hardening room, where the final freezing operation takes place. The hardening room is usually operated at a temperature of -10 to -20° F. and can use either the gravity or forced draft convection method of refrigeration.

Where gravity convection is used the hardening time runs from 18 to 24 hours. With forced draft convection this time can be reduced considerably.

The hardening room is usually a walk-in type storage cooler carried at a temperature of -10 to -20° F. Because of the low temperature held in the cooler, the hardening room is usually insulated with from 6 to 8 inches of cork or some other insulation of equal efficiency, and quite frequently has a vestibule entrance built at the door of the cooler. This prevents a great loss of temperature as employees load and unload the cooler, and eliminates a lot of frost around the refrigerator doors during periods of humid weather.

(To be continued next month.)

Table I—SPECIFIC HEAT FOR ICE CREAM MIX

Above Freezing	Below Freezing	Latent Heat
.80	.45	90.0
Weight of one gallon of mix—9 pounds.		
Weight of one gallon of ice cream—85% overrun—4.9 pounds.		

HOW DO YOU DO IT?

DO YOU have an easier way, a simpler way, to handle some knotty installation or servicing situation? Have you worked up some special shop or field tool that helps you do the job more quickly?

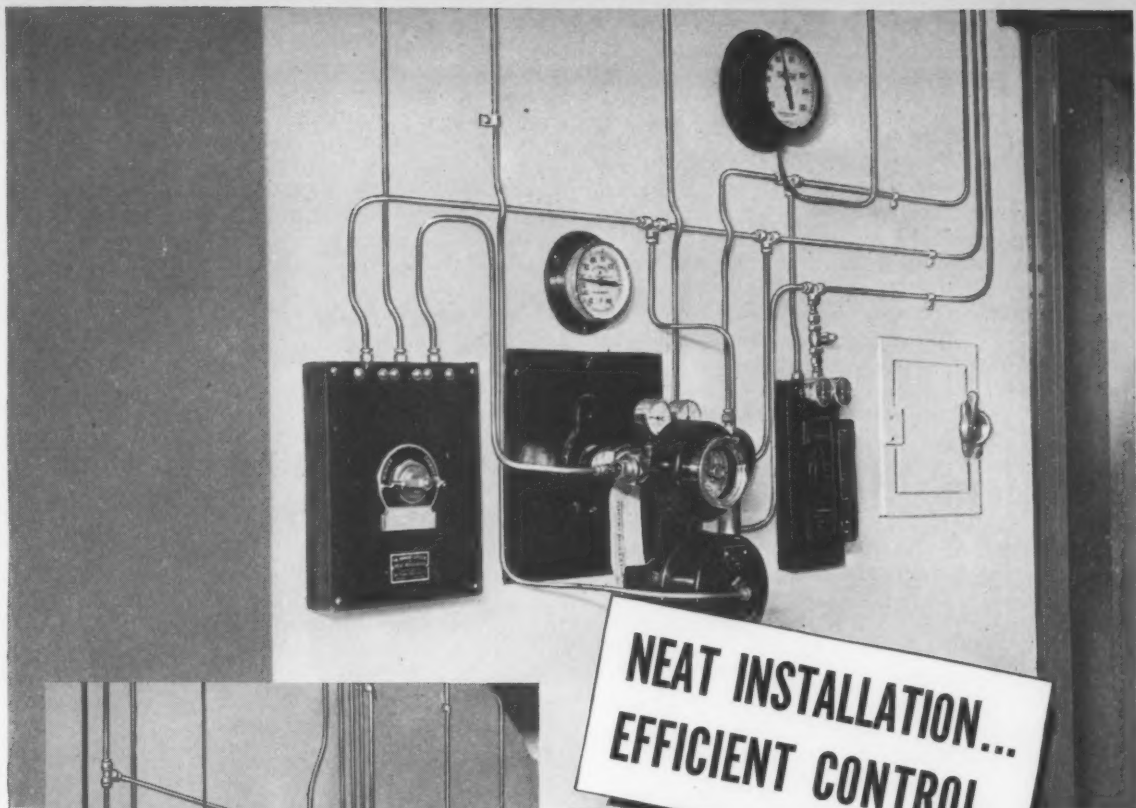
Send it to HERE'S HOW EDITOR, c/o THE REFRIGERATION INDUSTRY, 812 Huron Rd., Cleveland 15, Ohio. Five dollars (or a copy of "Modern Electric & Gas Refrigeration, by Althouse & Turnquist") is offered for each suggestion accepted for publication.

NEW CONNOR OUTLETS NAMED

Following new distributor appointments have recently been announced by W. B. Connor Engineering Corp. on its lines of "Dorex" absorption equipment and "Kno-Draft" diffusers:

W. Wallace Neale Co., Richmond, Va.; D. R. Rippey, Houston, Tex., and Walter Cooke, New Orleans, La.

Joe P. Dillard, Dallas, Tex., has been named a distributor for "Kno-Draft" diffusers only.



**NEAT INSTALLATION...
EFFICIENT CONTROL**

with REVERE DRYSEAL TUBE

With Revere Dryseal Copper Tube, which is available *now*, you can make not only a neat installation for air conditioning, refrigeration, heat control, bottled gas and many other services, but one which you know will perform as well as it looks.

This tube is "dead soft" so you can bend, cut and flare it with ease. It comes in coils of 25, 50 and 100 feet. Each length is individually treated to remove all interior moisture, then sealed at both ends. You get it clean, bright and bone-dry so that no moisture is present to react with any refrigerant and produce corrosive products.

It is made of deoxidized copper and is carefully kept free of oxides through every manufacturing step. It comes in sizes from $\frac{1}{8}$ " to $\frac{3}{4}$ " O.D. with .035" wall.

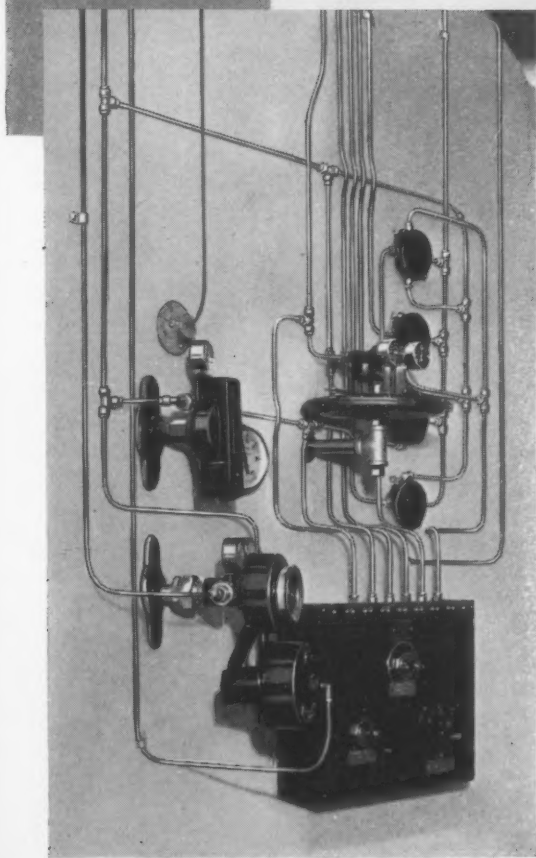
Also available for similar services is Revere Sealed End Copper Tube, which has each end plugged and taped for protection against injury and contamination. Revere Dryseal and Sealed End Copper Tube are sold by Revere Distributors in all parts of the country. The Revere Technical Advisory Service is always ready to help with your problems.

REVERE

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Executive Offices: 230 Park Ave., New York 17, N. Y.
Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; New Bedford, Mass.; Rome, N. Y. — Sales Offices in principal cities, distributors everywhere



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AA-5 ratings under PR-25 in line so as to insure scheduled deliveries being met.

B. A re-examination of the processing instructions to WPB field offices, allowing uprating of past individual ratings, and the issuance of a minimum AA-3 to insure these individual requirements being met.

C. Establishment of a new rating between AA-1 and AAA which would over-ride the present AA-1 ratings to insure proper identification of and quicker delivery of military orders.

"Issuance of the direction suggested in 'A' would definitely be of great assistance to all holders of spot authorizations under PR-25," the letter declared. "Incidentally, this, we understand, will affect some 80,000 units of production."

● NEW RATING STRUCTURE

TWO NEW PRIORITIES regulations (PR-28 and PR-29) have been issued by WPB. PR-28 allows a manufacturer to apply for special assistance on "bottleneck" items which might be needed to complete some civilian goods production. If his request (made on forms WPB-541 or 541a) is approved, he gets an AA-4 rating and a Z-3 symbol for controlled materials.

This is comparable with the assistance given to small manufacturers under PR-27.

The new rating system, which will go into full effect

at the end of 1945, is outlined in PR-29. This regulation merits detailed study by all manufacturers and suppliers in the refrigeration field. After the end of the third quarter, civilian ratings will be dropped, except in extremely urgent instances; military orders will be rated MM. The present (AA) rating system will not be continued, and these ratings may not be used after Oct. 1 on deliveries which are to be made after the first of next year. Some AA orders will be cancelled by WPB prior to Oct. 1; after that date, all non-military AA orders will automatically become unrated orders. Ratings can be extended up to Oct. 1, however, for material to be delivered in either 1945 or 1946.

● BUYING FACTS

A NEW CONSUMER survey recently completed by Scripps-Howard Newspapers in 13 cities turns up some interesting facts for postwar possibilities. According to the survey, 58.6% of the units owned are more than five years old, but 97% of them were reported to be in good operating condition, indicating that service men have not fallen down on their jobs.

Refrigerators were owned by 73.8% of the families in the 13 cities; 66.9% had electric units, 6.9% gas models. Where will they buy their new units? 11.6% say "appliance dealer," 13% "power company," and 42.6% are undecided. Of presently-owned units, 23.6% were purchased through appliance stores.

Only 1.6% of those interviewed now own home freezing units of one type or another, but postwar 12.7% intend to buy one.

Amana

HOME FREEZERS

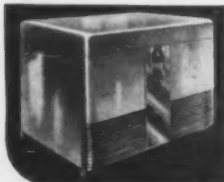
Years of experience in building quality low-temperature refrigeration equipment are behind Amana Home Freezers. This means complete owner satisfaction.

AMANA MODEL 200 . . . A combination Freezer-Cooler Unit for home or commercial use. Size 8'0" long x 4'0" wide x 6'10" high. It's a large capacity sharp Freezer and Frozen Food Cabinet combined with a Walk-In Cooler. A complete private locker plant! Write for information.



REFRIGERATION DIVISION

AMANA SOCIETY, AMANA, IOWA



AMANA MODEL 90

A nine cu. ft. unit for larger families. Exclusive full-opening lid for easy access to all contents. Modern in every detail.



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A five cu. ft. model for the average home. Beautiful design . . . full opening, counter-balanced lid—all contents easily accessible.



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Written by H. P. Manly, refrigeration authority, this NEW book covers refrigeration problems in conversational language so that its 300 pages and 138 diagrams and illustrations can't miss being a real HELP TO YOU. Covers practically every operation in field service and shop operations which may be required. Includes domestic types of refrigeration, and fully and completely explains the commercial types in small and medium sizes, such as used in markets, milk depots, soda fountains, flower shops, etc., as well as in many air conditioning systems.

INCLUDES GAS REFRIGERATION

The new '45 Refrigeration Service Manual covers repairs and maintenance of gas refrigerators and systems . . . Only \$2.00 leaves nothing to doubt . . . explained clearly and concisely.

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Bonney SPECIALISTS IN REFRIGERATION TOOLS

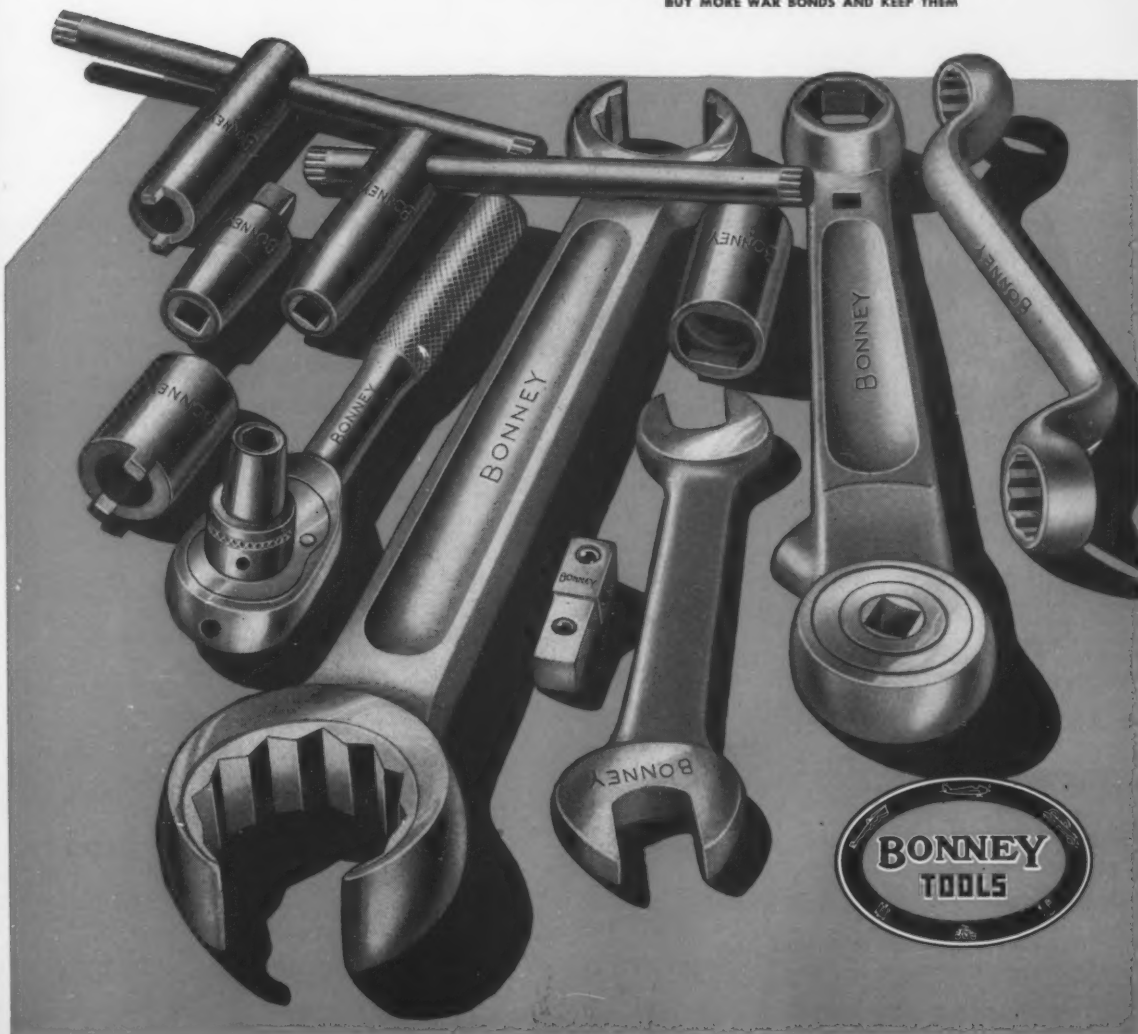
● Bonney Refrigeration Tools are "specialists"—designed for speedy work on refrigerant cylinders, valves, compressors, motors, etc. Each Bonney Tool is made from the finest steel obtainable and given "precision" heat treatment. Each Bonney Tool is thin... lightweight... properly balanced. You'll find nothing quite takes the place of Bonney Tools in providing long, all-around service and boosting your efficiency. Ask your nearest Bonney Refrigeration Jobber for full details.



BONNEY FORGE & TOOL WORKS
719 N. MEADOW ST., ALLENTOWN, PA.

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BUY MORE WAR BONDS AND KEEP THEM





● Yes sir, Aerovox motor-starting replacement capacitors are a match (match box for size comparison) for any standard capacitor-type motor.

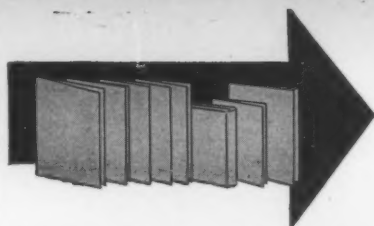
Only 28 universal numbers—22 for 110-volt, 6 for 220-volt—take care of upwards of 90% of all motor-capacitor replacements. Handy Aerovox conversion chart indicates proper universal types for any previously available exact-duplicate replacements. Minimum stock; maximum service.

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Ask about Aerovox motor-starting capacitor replacements. Ask to see the handy conversion chart. Ask for catalog—or write us direct.

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INDIVIDUALLY TESTED

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Export: 13 E. 40 St., New York 16, N.Y. Cable: 'ARLAB'



Useful Literature

The publications featured on this page were written by experts. They are FREE publications. To obtain these write to THE REFRIGERATION INDUSTRY, 812 HURON ROAD, Cleveland, 15, Ohio. If there is some delay in receiving the material requested, please understand that this is due to our operating with a minimum staff. We shall put through all requests as rapidly as possible.

183—Motor Starting Capacitors...
A catalog listing 28 "universal" types of motor starting capacitors designed to cover 90% of the standard capacitor type motors used in household refrigerators. Lists standard types of capacitors, motors, refrigerators, and corresponding capacitor replacement. Available from Aerovox Corp.

184—Temperature Exchanger...
Bulletin No. 12, describing the new temperature exchanger now available, describing features and uses. Engineering drawings show multiple installations for air or gas lines. Complete specifications and C.F.M. capacities of each model listed. Issued by Bird-White Co.

185—Floor Resurfacer...
A folder, issued by Tufcrete Co., illustrating and describing its "Tufcrete" resurfacing material for use on all types of floors. Lists various applications and shows by photos how material is applied.

186—Solvent-Proof Vinyl Resin...
A new 16-page illustrated catalog, issued by Resistoflex Corp., showing various industrial products made from compar, a specially compounded solvent-proof vinyl resin. Sections include ones on refrigerant hose and refrigerant charging hose. Uses in refrigeration field explained in question-and-answer section of booklet.

187—Pipe Joint Compound...
A folder, issued by X-Pando Corp., explaining the merits and applications of X-Pando pipe joint compound. Specific applications are listed, including refrigeration field uses, in both original installations and maintenance work.

188—Dehumidifying Device...
A folder on "Water-Sorber," a dehumidifying device of simple construction. Unit has no moving parts, services 800 to 1000 cu. ft. Applicable in all cases where excess moisture is a problem. Available from General Air Conditioning Co.

189—Fittings Catalog...
New catalog "E" issued by Northern Indiana Brass Co. showing Nibco's five complete lines—Wrot and Cast Solder fittings, Cast Drainage and Flared Tube Fittings, and Valves. Contains other useful ideas and information.

190—Air Conditioner...
A two-page bulletin describing the new Amcoil Comfortaire conditioner, issued by American Coils Co. Describes Models WCA 25 and WCA 50, the latter a double fan unit. Lists specifications and construction details; describes operation, use as dehumidifier.

191—Commercial Equipment...
A catalog (No. 44) issued by Viking Mfg. Corp., detailing its complete line of cooling and heating equipment. Section devoted to year-around air conditioners, room coolers and condensing units, the latter available in sizes from 1/4 to 5 H. P.

192—Packaged Cooling Unit...
A four-page bulletin on its 3 H. P. "packaged" cooling unit, issued by Airtemp Division, Chrysler Corp. Lists features, optional equipment, gives specification details.

193—Drying Agent...
Folders issued by W. A. Hammond Drierite Co., describing properties of this material for drying air, refrigerants and industrial gases, outlining various methods of application.

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8-45

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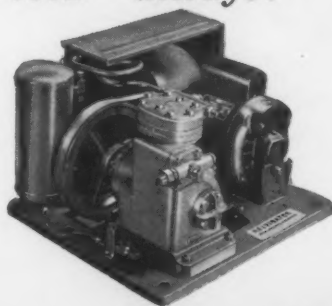


Customer: "What's going on here?"

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30 years of outstanding leadership in engineering, designing and manufacturing of condensing units means greater dependability, economy and performance.

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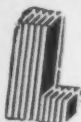


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Evaporative Condensers
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**The Watchdog
of the Nation's
Food Supply**

Write for
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LARKIN COILS
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FIRST LINE OF DEFENSE . . . Continued from page 26

ices. He excels in the type of service which requires special technical information, attention and experience. He competes with the service departments of the big-name appliance manufacturer's outlets. And he continues to increase in numbers and to prosper in spite of the impediments placed in his way by manufacturers and sales outlets, and in spite of whatever adverse "word-of-mouth" advertising he may receive from the industry.

Affable, Ambitious, Aggressive

We think our description of him is fairly complete, except to say that he is generally a pleasant, amiable fellow with a zealous desire to advance in the business. He eagerly enters into various programs to promote industry progress, yet he invariably ends up holding the wrong end of the stick. His patience, endurance and forbearance amaze those familiar with the picture.

Service parts manufacturers and jobbers have analyzed the position

and standing of the independent service companies, and have cast their lot with these men.

The entire industry would do well to re-examine and re-shape its policies towards independents. Service parts should be made available to them at a reasonable discount. If such parts are not made available, and the demand is large enough, an independent service parts manufacturer will provide adequate substitutes. Most service organizations would prefer to handle standard factory parts.

The independent service man, collectively, controls an enormous market. He can assist—or "stymie"—any sales program with his customers. He can sell and keep sold any acceptable product in any manufacturer's line. He can push and promote new lines. He is, potentially, a very dangerous opponent. He can be a sturdy and faithful ally.

The immediate future in the appliance business will bring out his qualifications and value to the industry.

He Can Help—Plenty

We are rapidly approaching a period of uncertainty and turmoil in the appliance business. New names, new products, new manufacturers, new dealers and new customers are merely awaiting the "go" flag to start off the wildest "Oklahoma Rush" ever experienced in any industry.

What better way for a manufacturer to assure the stability and field reputation of his new product than to approach a going, established, sound service concern to handle the complicated everyday installations and service problems?

What better, more soundly experienced organization could be enlisted to help sell—and keep sold—these new products in a territory?

What better source of sound, unbiased suggestions for engineering improvement or correction has the manufacturer than an impartial service company?

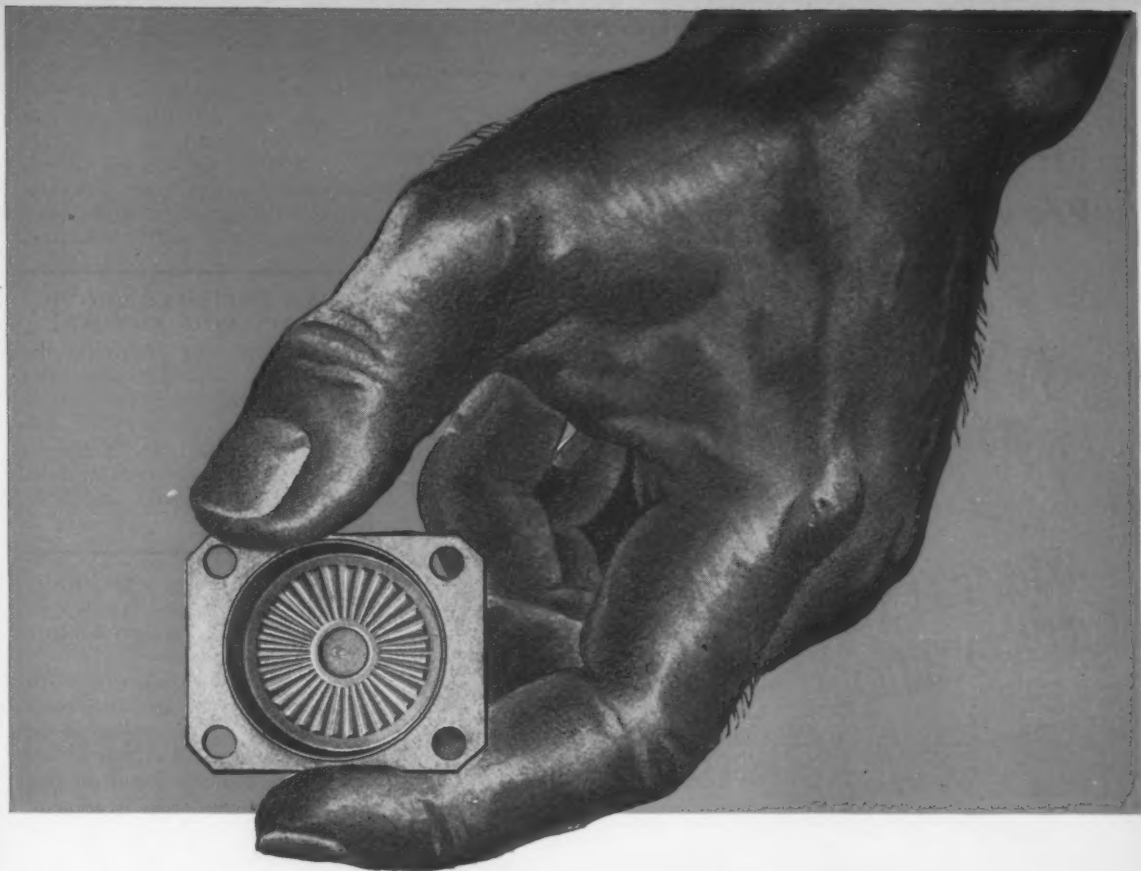
What, in turn, must the independent service company do to warrant this new business?

In the next article in this series, we'll review the most important factor, from an operating standpoint, which the service organization must be prepared to deal with if he is to qualify for this new, and highly promising, place in the national appliance merchandising picture.

**"its an
OASIS!"**

OASIS Electric Water Coolers supply the carefree, economical answer to the thirst problem! Twenty-four-hour-a-day delivery of refreshingly cooled drinking water, plus efficient low-cost operation, assure complete satisfaction. The trim, rugged, compact design of the OASIS Water Cooler harmonizes well with any surroundings, and the sanitary splash-free bubbler is a source of satisfaction to all who use it. Manufactured by EBCO, whose 20 years of progressive leadership in the water cooler industry insure carefree year-in-and-year-out service from the OASIS Electric Water Cooler.

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Here is the **SECRET** of Positive Automatic Temperature Control

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Here's How
It Works:



CONTRACTED

At left is a cross-section of the diaphragm and part of the liquid-filled capillary. The liquid has contracted, the diaphragm moving inward, causing the switch to function.



EXPANDED

In view at left, the liquid charge of the capillary has expanded with a rise in temperature. This positive force moves the diaphragm outward and causes the switch to function.



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**KINETIC CHEMICALS
FREON 11-FREON 12
FREON 22**

TEST CHAMBER . . .

Continued from page 19

climb to 60,000 ft. Cross heading the two 10' vacuum pump inlets is a surge tank 89" in length by 3' wide with an 8" vacuum line through our control valves to the main chamber and air lock.

Prime mover for the centrifugal fan is a 150 H.P. electric motor driving through a magnetic variable speed clutch with remote motor operated controller of 100 points for regulating fan output over a range from 300 to 1700 r.p.m. Mounted on a common bedplate, this assembly direct couples to the fan shaft through a double bellows type shaft seal running in low temperature lubricating oil.

Control Instruments

A panel board of five main instruments including two recording pressure controllers, one recording temperature controller and two indicating dive and climb controllers automatically control, through air-operated valves and pneumatic electric switches, the vacuum, air bleed, heating sections, and refrigeration. The latter is

accomplished by cycling the circulating pump, which can be reversed, for 30 seconds to purge the cooling coils of low temperature refrigerant when changing from cold to hot cycle, as in most dive conditions.

For test temperatures 140 hermetically sealed thermocouples with automatic switching to a high speed electronic recorder will be located on

**VILTER EMPLOYEE GROUP
NOW CONTROLS COMPANY**

Control and management of the Vilter Mfg. Co., Milwaukee, has passed from the Vilter family to a group of employee executives. New officers are E. B. Tilton, president, treasurer and general manager; A. A. Silverman, vice president, and A. E. Loos, secretary.

front side of chamber adjacent to a bank of 30 manometers for pressure readings recorded on light sensitive paper.

Humidifying equipment will consist of high velocity saturated air nozzles directed into the air stream at the discharge of the fan. This method has an advantage over the use of fluid nozzles as trouble from freezing of lines and size of water droplets are more easily controlled.

Dehumidifying make up air for human occupancy will be handled by routing through a mechanical dryer and silica gel cartridge assembly, valve manifolded so that a dry cartridge with sight glass container is always in reserve.

The electrical installation within the chamber has been minimized to a dozen vapor proof incandescent lights and one pressure sealed plug through which will run all power lines ending in moisture proof receptacles. Wiring for each test will be run from this centrally located point as the need arises.

The working floor is of 2" x 12" tongue and grooved red wood, laid crosswise to the chamber and supported on built up cork shoulders, as is the fan mounting in the plenum chamber. The ceiling of 3/8" plywood panels cross braced with strips of the same material is supported by hanging bolts on 3' centers from the previously mentioned phenolic breaker strips.

All wood work is coated with phenolic varnish for additional moisture resistance.

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TEMPERATURE**

DOLE
Vacuum
COLD PLATES

Maximum Refrigeration Efficiency

for all
**REFRIGERATION
PURPOSES**

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If the Carrene does not start to come down the liquid line, blow up the suction line and the Carrene will start to flow. Measure the amount withdrawn and check the drain-out charge with that shown opposite the correct model in Table I.

To recharge the machine, fill up the container with the correct charge and allow 2 ounces for purging. Now attach a piece of $\frac{1}{4}$ " tubing about 16 inches long to the liquid line leading up the back of the cabinet. Open up the purge vent on the float or meter, and block the fan to prevent any loose dirt from blowing into your container. Tighten up the suction line and insert the $\frac{1}{4}$ " tubing into the Carrene. Start the machine and allow it to run until the Carrene starts to enter the evaporator. The Carrene will usually continue to flow even with the machine shut off. Disconnect the line and reassemble the liquid line connections. The machine is now ready for purging, as outlined previously.

F. Undercharge of Carrene. An undercharge of Carrene on the Model

C is not as easily determined as an overcharge. The quickest way is to add a small amount of Carrene, usually 4 or 5 ounces, into the float and check the suction line to see if it gets colder. If it doesn't, the machine is obviously short, and the compressor running low on oil.

A very simple device can be made for facilitating the charging without disconnecting the lines at the rear of the machine. Take an old Grunow drier and cut off one end and clean out thoroughly. Leave about 10 to 12

inches of the $\frac{1}{4}$ " tubing on the drier. Swedge out the tube for $\frac{3}{16}$ " tubing and silver- or soft-solder about 8 inches of $\frac{3}{16}$ " tubing on to the $\frac{1}{4}$ ". When the purge screw is removed from the float meter, the $\frac{3}{16}$ " tubing will just fit into the hole. Bend the $\frac{1}{4}$ " tubing to allow the drier shell to be in an upright position. The small driers hold about 3 to 5 ounces, so that the Carrene can be poured directly into the shell for the first check.

If the machine is short 15 to 20
Continued on page 59

AMINCO OIL SEPARATORS



Aminco Oil Separators protect compressors by maintaining correct oil level in crankcase and by excluding oil from refrigerant stream they enable coils, condensers, valves and dehydrators to function most efficiently.

These oil separators are made for jobs from $\frac{1}{2}$ H.P. to 120 tons and are used everywhere, ashore or afloat, where efficient refrigeration is desired.

Full descriptive bulletins on request.

AMERICAN INJECTOR CO.

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Export: Borg-Warner, 310 So. Mich., Chicago

REFRIGERATION'S BIGGEST PROBLEM!



DRYING POWER OF VARIOUS MATERIALS

Drier	Refrigerant	Liquid or Vapor	Max. % Residual Moisture (Initial water concentration)	.25%	.01%
ACTIVATED ALUMINA	Sulfur Dioxide	L	.15	.01	.005
	Methyl Chloride	V	.02	.01	.006
SILICA GEL	Sulfur Dioxide	L	.15	.01	.006
	Methyl Chloride	V	.01	.01	.004
DRIERITE (Cadmium Sulphate)	Sulfur Dioxide	L	.15	.08	.009
	Methyl Chloride	V	.05	.04	.003
CALCIUM CHLORIDE $CaCl_2$	Sulfur Dioxide	L	.09	.03	.013
	Methyl Chloride	V	.10	.04	.005
CALCIUM OXIDE CaO	Sulfur Dioxide	L	.20	.15	—
	Methyl Chloride	V	.15	.08	—
BARIUM OXIDE BaO	Sulfur Dioxide	L	.20	.15	.017
	Methyl Chloride	V	.05	.03	.006

IMPORTANT QUESTIONS IN SELECTING A DRIER

1. Does the material dry the refrigerant below the corrosion limits when placed in the liquid line? In the suction (vapor) line?
2. Does the material dry the refrigerant below the limits for ice formation with methyl chloride?
3. Does the material accomplish the drying in one passage of the refrigerant, or is it slow, i.e., requires several passages?
4. Does the material deteriorate in physical character in handling or when it removes water from the refrigerant?
5. Does the oil affect the drier adversely?
6. Does the drier corrode?

FOR REFRIGERANTS—SEE YOUR ANSUL JOBBER

ANSUL CHEMICAL COMPANY

MARINETTE, WISCONSIN

AGENTS FOR KINETIC'S "FREON-11," "FREON-12" AND "FREON-22"



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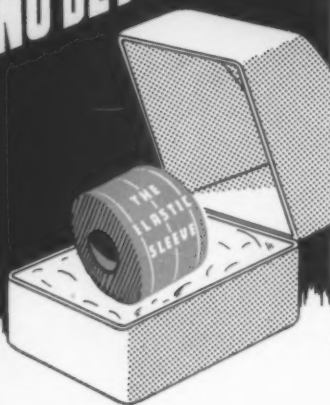
Here are practical answers to the most common refrigerant questions refrigeration men ask. This 8 1/2" x 11" book makes a handy reference you will use often. It is complete and authoritative.

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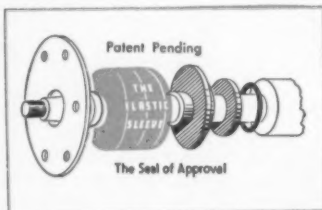
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FOR THE REFRIGERATION INDUSTRY

THE ELASTIC SLEEVE was introduced to the refrigeration industry less than three months ago yet it has already been accepted and approved by leading refrigeration engineers as one of the most sensational, most needed and simple yet effective seals for rotating shafts. To appreciate the many advantages to be had through the use of THE ELASTIC SLEEVE, you should check it in action—compare it with more costly breakable old style seals—prove its superiority through actual test.



COMPARE THESE INNUMERABLE FEATURES

Has no fragile parts to break • Works equally well on worn and pitted shafts • Eliminates springs and shims • Is assured of proper lubrication • Is easy to install as a replacement seal • Features the sensational "O" ring between the shaft end and the worn shaft • Can be adapted to cure your seal problems.

Write for Descriptive Folder

TEMPERATURE *Control Devices*

NEW HAVEN 15, CONNECTICUT



Over the COUNTER

JIM: Frank, I want you to call our men together for a meeting when the store closes tonight. I just realized we've got to start to do more missionary work, to let our customers know all the different services we furnish to keep parts and supplies on our shelves for quick delivery when our customers need them, and also how we can help them save both time and money.

FRANK: But Jim, that's an old story, as far as I can see. We've been telling all our customers about things like that for years and years, haven't we?

JIM: That's where you're wrong, Jim. I thought so, too, until I called on Jack Jones, that new refrigeration man on the South Side. We haven't stopped to realize that a lot of new men are coming into the refrigeration picture right now, and that more will be coming in as time goes on.

Some of our old customers, too, may have forgotten about these things, and it's our job to refresh their memories. In the postwar years, there'll be new competition for everybody—and if we want to hold our own, we'll have to be on our toes all the time.

FRANK: I see what you mean, Jim. I think it's a good idea for all of us to start thinking about these coming conditions, and sort of get our own houses in order before they actually arrive. By the way, how do you figure to get your ideas over to the boys in tonight's session?

JIM: Well, I thought of a half-dozen points that seem to me to just about sum up the situation, and I figured the best way would be to just bring 'em up, one at a time, to make sure the fellows had them well in mind.

First, I want to remind them that

they should always point out to our customers that we, as jobbers, make a business of warehousing parts and supplies.

Second, this business occupies our whole time, thought and activity—100% of it.

Third, our men are trained to handle all details involved in a business like this, where thousands of different parts and specifications make the stocking of merchandise a very tough job, but a very important one.

Fourth, since we, as jobbers, don't install equipment or do service work, we can qualify as "specialists" in knowing how to obtain supplies for our customers' benefit.

Fifth, because we are "specialists," most manufacturers of parts and supplies look to us as their



logical distributive outlets—because we know the trade, what customers are buying, and what products they're interested in. On the other hand, we ourselves are always on the lookout for new products to handle, to build up the scope of our service to customers.

Sixth, because we serve many customers, we can afford to carry big stocks and a wide variety of parts, far beyond what it would pay the average service contractor to stock, if he were operating entirely on his own.

FRANK: You know, Jim, that last point you mentioned is one that we ought to bear down on, plenty—I'll bet it's something that seldom occurs to the average customer.

Cont. on page 58

Soup's On for a hundred Gauge Sockets

ONE OF THE REASONS 6 OUT OF 10 PICK U. S. GAUGES



WE REAR GAUGES FROM THE LADLE

It is no secret that U. S. is the only gaugemaker building instruments from parts fashioned entirely within its own plants. Sockets, rings, cases, segments, housings and other components of brass, bronze, or iron are cast right in our own

foundries. These foundries have a notable reputation for quality in quantity.

IN GAUGES, IT'S U. S. OVER 6 TO 4 —

For every ten times gauges are selected by original equipment manufacturers, the choice is U. S. in over six. The fact that all operations, casting being one of them, are completed within our own shops contributes to this overwhelming preference. But the real reason is *Manufacturing Control*, a program of checking and double checking to make sure each U. S. gauge leaving the plant is a worthy ambassador of our Company.



← KEEP YOUR EYE
PEELED FOR THIS
GREAT GAUGE CATALOG

Now being rushed to completion. Available soon. Over 100 pages jam-packed with information on gauges, gauge movements and gaugemaking. Gauges double-referenced for ease in selection. Special guide for ease in ordering. Reserve your copy today (no obligation) ... on your business letterhead, please.



SALT FOR THE SOUP—What sand to use, how tight to ram, how fast to pour are the ingredients with which our men, with up to 25 years' experience, season the broth ...

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Manufacturers of Pressure, Temperature, Flow,
Electrical and Level Measuring Instruments

U. S. INSTRUMENTS Tell The Truth





JARROW PRODUCTS
420 N. LA SALLE ST., CHICAGO 10, ILLINOIS

OVER THE COUNTER . . .

Continued from page 56

For instance, what would it mean, in time and money, if all our customers had to write to all of the manufacturers for catalogs and price lists, see that these are kept up to date at all times, check and compare prices of one line against another, study specifications, and finally arrive at the ones most generally used and best suited to the needs of a particular section or a particular application?

JIM: It would be such a job that they'd never be able to keep on top of it and do their regular work, too.

FRANK: Sure. And another thing—what about the time it would take to make up orders to each manufacturer for materials, to handle returned goods and repairs that have to go back to factory headquarters, to keep records on refrigerant cylinders, and all the other routine work of this kind that the jobber does for his customers?

JIM: Some persons sometimes get the idea that they'd be ahead by ordering direct from the manufacturer, but it doesn't work out that way when you study it closely.

In the first place, they'd save little or nothing in the cost of the materials, and they'd have considerable capital tied up in stock, "dead" items that would be plenty hard to dispose of, and the risk of additional losses due to theft.

FRANK: Yeah, to say nothing of the extra bookkeeping and office work they'd be in for—handling orders, invoices and accounts, paying separate bills for each account, writing letters to straighten out errors in shipments, forms, and specifications that just can't help happening from time to time.

JIM: Besides all that, they'd find it's a real he-man job to order and stock far enough in advance to have all of the hundreds of items they needed on hand when they're ready to use them. We jobbers do all of that for them, as a regular part of our service—all they need to do, when they want the material, is to come in and pick it up, or write or phone us and we'll mail it to them.

FRANK: You know, just talkin' about it has done a lot to refresh my own memory, and I've been around here long enough to know all the answers—or, at least, to think I do. I think you're wise to recall these points to our men, so they can pass them along to our customers.

Most customers know that their jobber performs a real service, but like it is with most familiar things, they're apt to forget about them, especially when they're as busy as we've all been lately.

I'll see that all the boys stick around after closing time. Getting straight on how the jobber fits into the picture is something I want them—and our customers—to know.

FREEZING VEGETABLES

First-of-the-season vegetables are usually more preferable for freezing, advises Dr. Donald K. Tressler, foods consultant to General Electric Co. who has been one of the pioneers in the freezing field since 1929.

STANGARD

Prime Surface

COLD PLATES

For Maximum
Refrigerating Efficiency



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STANGARD KNOWS REFRIGERATION

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ounces, check with the owner to determine how much purging had been done, or what service had been rendered. If very little purging had been done, or servicing, the machine obviously has a leak. When your car has a flat tire, you do not expect the air to stay in knowing that it has a leak. You naturally fix it first and then put in air. Don't expect a refrigerator to be any different. That leak is not going to plug up by itself. Find it and fix it!

(Editor's Note: Suggested methods of testing for refrigerant leaks, plus a continuation of common service complaints and their correction, will be covered in the second article in this series, to appear next month.)

ALCO HANDBOOKS AID WAR TRAINING

An unheralded but substantial contribution to refrigeration's part in the successful prosecution of the war has been made by the "Handbook of Automatic Refrigerant Control," pub-

lished by Alco Valve Co.

Originally issued in 1940 to sell for 50¢ a copy, more than 10,000 copies have now been distributed free of cost to members of the armed services and to the refrigeration schools organized to instruct army, navy and maritime personnel during the war years.

This 68-page, pocket-size handbook of information and data for the commercial refrigeration and air conditioning contractor, dealer and service engineer does not attempt to treat the

whole broad subject of refrigeration but instead emphasizes the control of refrigerant in the system. Terms, definitions and discussions have been put into the simplest, least technical language possible. The book was not intended as a substitute for the fine technical reference works available to the industry, but as a handy guide on a specific subject.

Practically out of general circulation for about three years, this handbook is again available for such distribution.

PETE and PAT . . . The PENN-TUBE Pals



"Listen, sweetheart! Cut the comedy—I KNOW
Penn Tubing is easy to bend!"

If your AIR-CONDITIONING OR REFRIGERATION EQUIPMENT has gone to War...

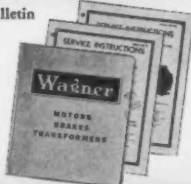


If the equipment you are now manufacturing is essential to war production plants, housing projects, or to the armed forces, Wagner will gladly figure with you on your motor requirements. Consult the nearest of Wagner's 29 branches, located in principal cities and manned by trained field engineers.

Write For Bulletins

You should have Bulletin MU-185 (Single-phase and Polyphase Motors).

You should also have Service Bulletins MU-7B and MU-30B.



MA5-20

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Easy to bend? Certainly! PENN TUBING is the kind that's easy, quick to install. Saves time, does a better job. All sizes from 1/8" to 3/4" inclusive, in 25-, 50- and 100-ft. coils. Your jobber has PENN TUBING!

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**REFRIGERANT
LEAK DETECTOR**

Trace is introduced into all refrigerating systems . . . old, new and reconditioned . . . for the prompt detection of existing leaks or the spotting of slowly developing future leaks as soon as they occur. Trace imparts a vivid red color to the oil and refrigerant, which appears as red stains at the points of leakage.

TRADE PRICES

4 oz. bottle	\$ 1.00
(48 bottles to a case)	
1 pint bottle	\$ 3.00
(24 bottles to a case)	
1 quart container	\$ 5.00
(12 containers to a case)	
1 gallon container	\$16.00
(6 containers to a case)	
Save 10% on case lots	

**SUPERIOR
QUALITIES**

- Trace can be used with all refrigerants
- Trace is extremely penetrating
- Trace is non-corrosive
- Trace will not affect the refrigerant or the lubricating properties of the oil
- Trace will not form sludge
- Trace is thoroughly dehydrated

*For tough-to-spot
Refrigerant Leaks*

The Fight against MOISTURE



"HOW DRY I AM!"

In the case of this young man, a bounce of prevention is worth many a trounce of cure.

For the "young" refrigeration unit, moisture prophylaxis is infinitely better than subsequent dehydration. TZ will do it either way, but the wise engineer prefers the preventive technique to the curative.

- A TINY AMOUNT •
- A BIG JOB •
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The PIONEER FLUID DEHYDRANT

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CONTROL TIME



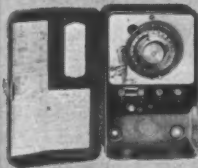
Mr. Tops, the Paragon Symbol of Top Quality.

and YOU CONTROL COSTS!

"Keep the cost down"...is a demand which manufacturers will soon again have to meet. During the war, industry has learned much about cutting cost through control of timed operations. Paragon automatic electric time control instruments not only help to lower costs, but also increase output...multiply manpower efficiency...and save precious hours...on countless jobs.

What is your time control need?

● PARAGON DESIGNS AND BUILDS UNITS FOR PRACTICALLY EVERY TIME CONTROL NEED



SERIES 300

General purpose, Telechron motor operated timeswitch, self-lubricating, for

controlling signs, stokers, blowers, pumps, and other purposes. Accurate, rugged.



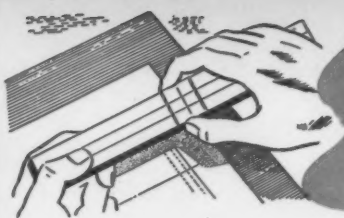
SERIES 2500

Manually preset interval timer, can be preset to perform a great variety of operations: to allow

a given operation to continue for almost any predetermined time limit; and to close or open a circuit at the end of the preset time. Synchronous motor operated.

PARAGON ELECTRIC COMPANY
735 Old Colony Building Chicago 5, Illinois

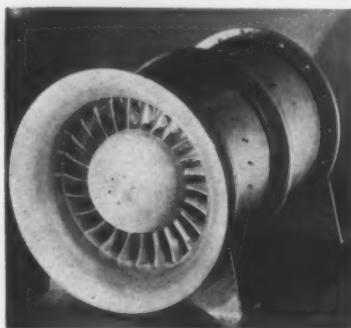
Paragon Chicago
BUILDERS OF ELECTRICAL EQUIPMENT SINCE 1905



New PRODUCTS

Blowers and Fans

Buffalo Turbine Corp., Buffalo, N. Y., has announced a new line of axial-flow compressors, blowers and fans. Based on new design methods developed by James G. Sawyer, chief engineer, the equipment is said to have superior pressure and flow char-



acteristics and to maintain exceptionally high efficiencies.

Special motors having high horsepower and small diameters are used to reduce over-all weight. The equipment is recommended for heating, ventilating and air conditioning applications requiring pressures up to 6 inches of water, and for dust removal, conveying, processing, drying and forced draft blowers requiring 10 to 100 inches of water.

Design of the units is said to be such that they can be installed in accordance with requirements of conventional duct systems, either floor, ceiling or wall mounted or suspended in the duct.

Air Freshener

Of interest to contractors working with air conditioning and ventilating equipment is "Airkem", a new chlorophyll air freshener, designed to control odors and create a natural indoor freshness and provide a more stimulating atmosphere.

The product, a liquid which contains activated chlorophyll, is patented. It is introduced into air conditioning systems through a special evaporator connected to the return air

duct, and through which some of the returning air is by-passed. Rate at which the liquid is picked up is controlled by dampers, and may be accelerated by heaters built into the unit.

The evaporator, which has no moving parts, may be located anywhere within or near the equipment, it is said.

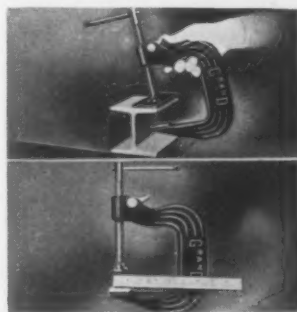
Flexible Tool Holder

A new flexible tool holder, trade-named "Tool-flex" and manufactured by Richmond, Inc., Los Angeles, is said to correct lathe misalignment, prevent bell-mouthing, and reduce tool breakage.

Speed "C" Clamps

Grand Specialties Co., Chicago, announces a new line of extra deep throat speed clamps. In addition to the extra deep throats, this new type of "C" clamp incorporates "quick-action" features.

It is claimed that the clamp can be positioned instantly by simply push-



ing down on the ratchet screw and tightening with a turn of the handle. The clamp is said to release instantly by merely loosening the handle and pushing with thumb or finger on trigger release pawl which frees the ratchet screw.

The clamp is claimed to hold work with a firm tension grip on any surface, even slanting or irregular, and is equipped with replaceable ball and socket swivel to prevent shift-

ing or creeping while it is in use.

This new line of clamps includes three sizes as follows: $4\frac{3}{4}$ " opening— $4\frac{1}{4}$ " throat; $6\frac{3}{4}$ " opening— $4\frac{3}{4}$ " throat; $8\frac{3}{4}$ " opening—6" throat.

Hydraulic Packing

T-ring packing, a hydraulic packing that eliminates extrusion damage, has been developed by The Weatherhead Co., Cleveland. The packing consists of a resilient sealing ring of synthetic rubber in a T-section supported on the side by two non-extrusion ring retainers.

The installation is such that the synthetic rubber member is under a slight compression, which provides the static seal. Designed originally for general aircraft hydraulic service, it has been tested at pressures up to 3000 p.s.i. and has shown satisfactory results in laboratory and field tests, it is claimed.

Pocket Circuit Tester

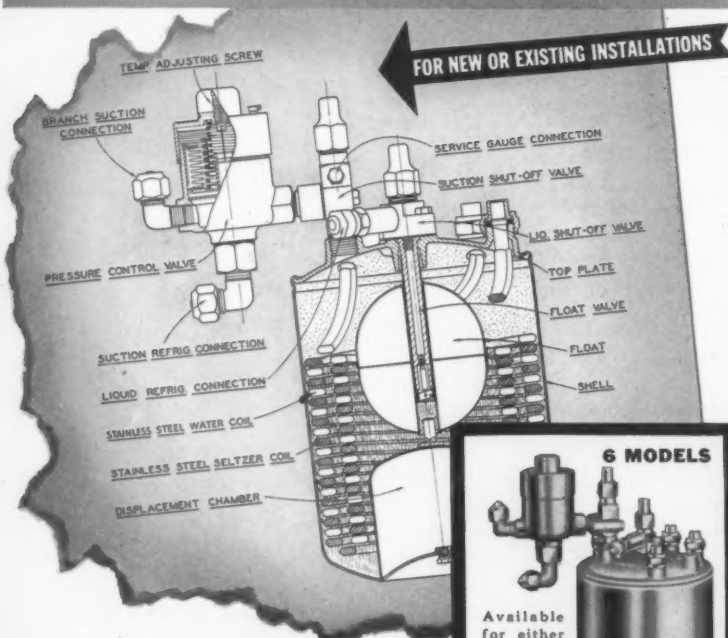
A new all-purpose circuit tester for all who have to do with electricity, has been made available by

Amerline, manufacturer of plastic and metal specialties, Chicago. It is convenient vest-pocket type, and indicates voltages from 90 DC, and 60 AC, to 500 volts AC or DC. A General Electric neon lamp on the top glows in varying intensities indicating circuit conditions. No glow indicates a dead line. The lamp lights on currents as low as one microampere.

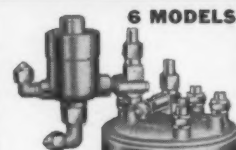
The new tester is used for locating blown fuses, trouble-shooting in cords and appliances such as electric irons, toasters, etc., testing radio frequency, receivers, plate circuits, and screen grids; for testing spark plugs, meters, condensers, armatures, etc.

The device has a list price of 50 cents, and is available through jobbers.

Perfect 40° control WITH TEMPRITE SODA FOUNTAIN and BEVERAGE COOLERS



● When you install a Temprite soda fountain or beverage cooler you can be sure of a constant 40 deg. temperature with Temprite's patented instantaneous cooling principle and constant pressure control valve. The beverage is cooled as used and only at the rate required. Can handle either 1, 2 or 3 carbonated or non-carbonated beverages in each cooler. Write for descriptive literature today.



Available for either light, medium or heavy duty dispensing applications.

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Originators of Instantaneous



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DETROIT, MICHIGAN

FITTINGS STANDARD

The proposed simplified practice recommendation for cast brass solder-joint fittings has been approved, reports the division of simplified practice of National Bureau of Standards. The recommendation, which sets up a stock list of fittings and illustrates the 37 types, was effective July 1.

The RIGHT FLUXES for the REFRIGERATING INDUSTRY

There is absolutely no irritation to the eyes, nose or skin when using Krembs FLUXINE Fluxes. There are positively no injurious fumes. That is only one of the many advantages of Krembs FLUXINE Fluxes. They are highly concentrated . . . contain no waste material . . . just flux. That's why they do more and better brazing, soft soldering, and silver soldering.

There is a FLUXINE Flux for every metal-joining operation. For instance, our FLUXINE Flux No. 43 is ideal for low-melting-point silver solders. There are 89 FLUXINE Fluxes . . . each for a specific job. Write us your metal-joining problems. We have 70 years of experience.

Ask your jobber about FLUXINE Fluxes. He knows they produce the best results with the greatest economy.

Write for chart which shows the FLUXINE Fluxes to use for your metal-joining problems.

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FLUXINE

THE REFRIGERATION INDUSTRY



E. A. Seibert, director of service of the Kelvinator Division of Nash-Kelvinator Corp., has completed two decades on the same job with the corporation. His twentieth anniversary was observed by officials at a luncheon recently. Widely known in the refrigeration field, Mr. Seibert joined Kelvinator June 25, 1925. Sharing his anniversary cake is C. T. Lawson, Kelvinator general sales manager.

RUEGG HEADS APPLIANCE PARTS JOBBERS GROUP

Carl S. Ruegg, of Ruegg Refrigeration & Supply, Omaha, is the new president of the Appliance Parts Jobbers Association.

MCCORD'S AWARD RENEWED SIXTH TIME

One of the few companies in the entire country so honored, McCord Corp. of Detroit has been awarded the sixth Army-Navy Production Award for outstanding achievement in producing materials for war. McCord's

first award was made on March 27, 1942. This sixth renewal adds the fifth white star to the Army-Navy award flag flying over the McCord plant.

NEW DISTRIBUTORS

Two additional distributors have recently been named by Admiral Corp. They are: Fan-San Distributing Co., Ben Kulick, president and sales manager, to cover the Buffalo territory, and Small & Schelosky Co., to cover the Evansville, Ind., area. A. P. Schlimmer is manager of the firm's appliance division.



**YOU MAY HAVE TO MAKE AN EXTRA TRIP
... SO ALWAYS TAKE ICE-X ALONG!**

ICE-X quickly cures emergency freeze ups when ice forms at the expansion valve or capillary tube. Harmless to use. Great for Freon, Carrene, or Methyl Chloride systems ... The dependable liquid anti-freeze.

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EXCLUSIVE NATIONAL DISTRIBUTOR
THE HARRY ALTER CO. 1728 S. MICHIGAN AVE.
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JOBBERS: WRITE FOR SPECIAL PROPOSITION!

Electrimatic Regulating Valves

Automatic control and regulating valves for Freon, Methyl Chloride and Ammonia. A large variety of sizes and types available for practically any refrigeration requirement.



WL water regulating valves for Freon, Methyl, or Sulphur. $\frac{3}{8}$ " orifice and $\frac{1}{2}$ " FPT. Brass body construction. Large capacity—no chatter.

WP water regulating valves are available in $\frac{3}{8}$ ", $\frac{1}{2}$ " and $\frac{3}{4}$ " FPT sizes. Brass body construction for Freon, Methyl or Sulphur. Easy adjustment.



WK water regulating valves are De Luxe Pilot Operated Modulating valves. Iron body, simple adjustment. Available in sizes ranging from $\frac{3}{4}$ " to 2" FPT.



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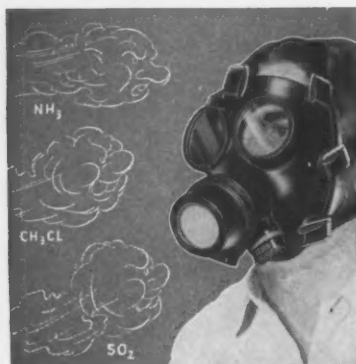
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CESCO'S Healthguard Fume Kit (No. 605) offers triple protection to refrigeration servicemen. Quick-change filter cartridges provide safety against ammonia, methylchloride and sulphur-dioxide fumes... all in one convenient kit. The soft molded rubber face-piece of the fume mask, and the instantly adjustable headgear assure a gastight, comfortable fit for every wearer. Large hardened safety glass lenses give perfect visibility.

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HELP WANTED

RATES: minimum, 25 words, \$2.00; each additional word, 10c. Bold type or all capitals: minimum, 25 words, \$3.00, additional words, 15c. All insertions, payable in advance.

"I WANT A JOB"

DISCHARGED VETERAN of 267th M. P. Co., also with service in C. A., would like job as refrigeration service man. Correspondence school graduate, little field experience but much interested in field and its future. Box 845-A, Refrigeration Industry.

HELP WANTED

SERVICE MANAGER with ability to organize service department and train men for organization engaged in domestic and commercial refrigeration, covering 17 Northern Ohio counties. Ample facilities to create outstanding department. State full particulars and salary requirements in first letter. Box 8453 Refrigeration Industry.

SALESMEN wanted to sell nationally advertised refrigeration equipment in and around San Francisco Bay area. Openings for industrial Sales Engineer; retail commercial men and wholesale distribution men. Excellent opportunity, permanent. All replies will be strictly confidential. Box 8454, Refrigeration Industry.

EXPERIENCED refrigeration service man wanted. Must be first class mechanic. Opening is with leading western G. E. dealer. Wire details collect if interested. Idaho Falls Electric Co., Idaho Falls, Idaho.

WANTED by Eastern Massachusetts firm, experienced refrigeration service man capable of servicing both domestic and commercial refrigeration. Immediate opening. Write Box 8456, The Refrigeration Industry.

New evaporative condensers replacing an old system of water-cooled condensers and cooling towers have saved the Scott Powell Division of the Philadelphia Dairy Co. 75 per cent in annual maintenance costs, and reduced the space needed for the company's refrigeration plant by a third.

The new condensers were installed by York Corp. engineers on the roof of the dairy, and make use of existing piping. By eliminating the two cooling towers in the old system, the cost of annually repairing the tower and guarding it against freezing during cold weather was completely eliminated.

Equipment in the new installation includes two multiple coil economizers. The system delivers 240 tons of refrigeration to handle 250,000 pounds of milk daily in this main milk plant for the city of Philadelphia. In winter, the condensers will operate from the roof without water, thus eliminating the freezing problem previously encountered.

REFRIGERATION SERVICE MAN with knowledge in commercial and domestic service, and installation work. Must furnish hand tools and car. Good working conditions. Well equipped shop. Jerry's Refrigeration Co., 610 Washington St., Wausau, Wis.

SERVICE AND INSTALLATION MECHANIC: for large commercial and industrial refrigerating equipment. Prefer man experienced with both freon and ammonia but will train in one field if qualified. Permanent with overtime 40 hours week. Philadelphia area. Refrigeration Industry. Box 8455.

COMMERCIAL REFRIGERATION service man. Exceptional opportunity, permanent position. Hourly rate plus commission, car allowance and profit-sharing arrangement. Must have ability and experience in servicing industrial, commercial and air conditioning equipment. We are a well-established firm located in northern Ohio. Box 8452, Refrigeration Industry.

FOR SALE

FOR SALE, 1200 size Locker Plant complete with standby equipment, curing plant and retail market. Good town near Oklahoma City. Selling to dissolve partnership as both owners have other interest. Reasonable terms to right party. Address Box 8451, Refrigeration Industry.

Prefabricated sectional new metal walk-in storage coolers, all sizes. 10 gal. water coolers. New bottle coolers. Ice makers. Frosted Food cabinets. Water and air cooled condensing units. Write for list and prices. EDISON COOLING CORP., 310 E. 149th St., New York, 51, N. Y.

SERVICE COUNCIL AWARDS

The major contribution made by several war agencies and other national organizations to the wartime problems of the refrigeration repair industry was recognized at a luncheon of the National Refrigeration Service Council, held June 20 in Washington, where special presentations were made to Mr. Paul V. McNutt, chairman, WMC, Dr. W. Y. Elliott, vice chairman for civilian requirements, WPB, and Mr. P. T. Walker, president, council of electric operating companies. A special tribute was also paid to Col. George H. Baker, chief, manpower division, National Selective Service headquarters, as well as to representatives of the General Industrial Equipment branch, WPB, and of the U. S. Department of Education. Ray Kromer, Council chairman, presided at the meeting.

THE REFRIGERATION INDUSTRY

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THERMOSTATIC EXPANSION VALVE FOR
THOSE TIGHT PLACES WHERE *Other*
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The Pace of Victory Permits Only A Congratulatory Handshake!

American Industry well merits a decoration for its brilliant record in the Mighty 7th! But, as our newly decorated Pacific heroes quickly return to combat, so industrial leaders aren't resting on their laurels. **Back into Bond action**—they are now busy consolidating recent Payroll Savings Plan gains!

First, many executives are now patriotically working to retain the substantial number of new names recently enrolled during the 7th War Loan. By selective resolicitation, they are urging all new subscribers to maintain Bond buying allotments.

Second, many are also employing selective resolicitation to urge every worker who increased his or her subscription in the 7th to continue on this wise, saving-more-for-the-future basis.

Help to curb inflationary pressures and harvest peacetime prosperity by holding the number of Payroll Savings Plan subscribers—and amounts of individual subscriptions—to the mark set in the Mighty 7th!

The Treasury Department acknowledges with appreciation the publication of this message by

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This is an official U.S. Treasury advertisement prepared under the auspices of Treasury Department and War Advertising Council



